ENGINEERING NEWS-RECORD

JULY 28, 1960

PRICE 50 CENTS

CONTENTS ON PAGE 15

▶ The top contractors of 1959 *p.19*

Building a building for engineers *p.30*

A McGRAW-HILL PUBLICATION

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Armco MULTI-PLATE Pipes Installed in 1931 Still in Excellent Shape

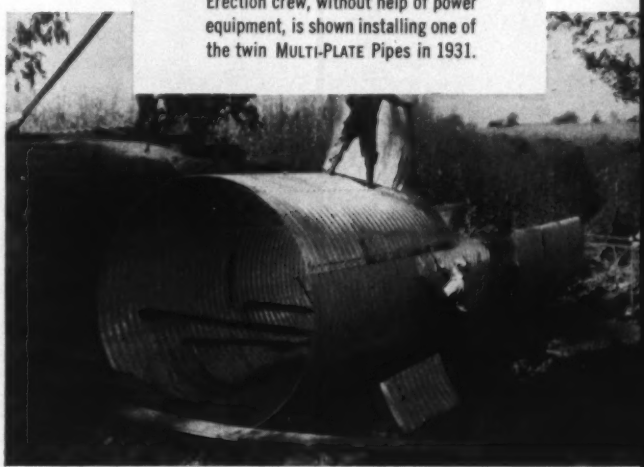
New steels are born at Armco

Here is the 29-year-old Armco MULTI-PLATE culvert as it looks today. Each pipe is 120 inches in diameter, 3 and 5 gage, and 40 feet long.

Twenty-nine years ago, in Sangamon County near Springfield, Illinois, a county highway crew installed a twin Armco MULTI-PLATE® Drainage Structure — one of the first — to replace an old, narrow bridge. Today, this culvert is still in excellent condition.

This is convincing evidence of durability. Long service life is one reason why engineers and contractors are using these corrugated metal drainage structures on many Interstate and other limited-access highways all over the country.

For dimensional and engineering information, write us for literature on Armco MULTI-PLATE Drainage Structures —or ask your local Armco Sales Engineer. Armco Drainage & Metal Products, Inc., 4800 Curtis St., Middletown, Ohio.



Erection crew, without help of power equipment, is shown installing one of the twin MULTI-PLATE Pipes in 1931.

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127-hp
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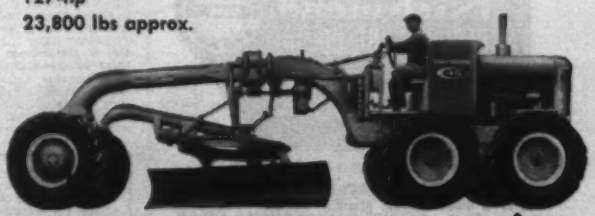

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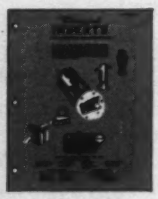

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ENGINEERING NEWS-RECORD, Vol. 165, No. 4, July 28, 1960

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** OFFICERS OF THE PUBLICATIONS DIVISION: Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U.S.A.

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LUBE LOGIC Five tips to

How to return stored engines to service

In a previous issue of Lube Logic we gave you an 11-point program designed to protect gasoline and diesel engines during long idle periods. Now we'd like to finish what we started by describing the routine for taking engines *out* of storage and putting them back into action.

1 Where Texaco Rustproof Compound L has been applied to exterior of engine, remove with kerosine.

2 Remove waterproof paper and tape from all openings.

3 Remove spark plugs. Clean them and check the gap settings before replacing.

4 Remove distributor cap and clean Texaco Rustproof Compound L thoroughly from lobe of breaker cams. Replace cap.

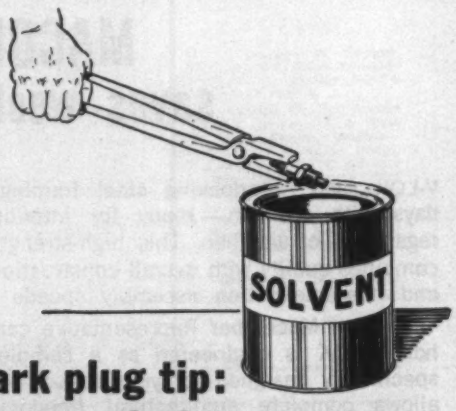
5 Check the level of the crankcase oil. If it's at the full mark, there's no need to drain the oil before operating the engine unless it requires a different grade. If the oil has fallen below the full mark during storage, drain the engine and locate the oil leak, and repair it, then refill with the proper grade of oil, before operating the engine. The first oil change after the engine is back in service should be made in half the usual period.

6 Check the cooling system for leaks, and add water or Texaco PT Anti-Freeze if necessary. It's not necessary to drain and flush if the cooling system was filled with a rust-inhibited anti-freeze before storage.

7 Fill the fuel system, start the engine, and let it run for a while. Check the oil pressure, and check for overheating and oil and fuel leaks.

End-of-shift is the best fueling time

They say there's a time and a place for everything, and for refueling equipment the best time is at the end of each day's work. And here are two reasons why. End-of-shift minimizes the possibility of fuel-tank rusting, because there's no room for condensate to form in a tank that's full of gasoline or diesel fuel. And tank-bottom sediment, stirred up by pumping in fuel, has a chance to settle down overnight, so it won't be drawn into the fuel line.

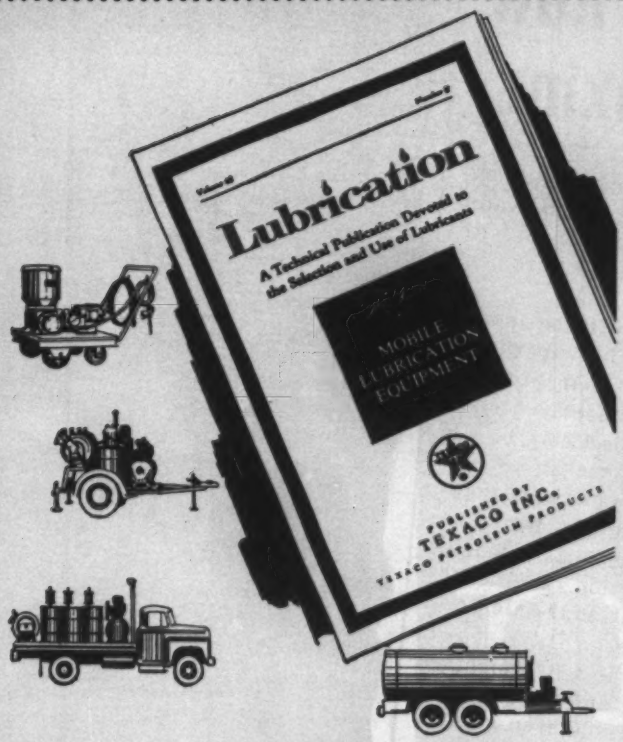


Spark plug tip: Degrease before you blast

Don't depend on your spark plug cleaner to do everything. As a matter of fact, you can actually make things worse by blasting an oil-fouled plug. Heavy oil deposits on the plug will pick up the abrasive and hold it in the recesses between the shell and the insulator. Result: burning and ultimate failure because these deposits can seriously affect the spark plug's ability to dissipate heat at high engine speeds.

Moral: degrease oil plugs in a suitable solvent and dry them *before* you blast.

prolong equipment service life


Lubrication
A Technical Publication Devoted to the Selection and Use of Lubricants
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The whole truth about mobile LUBE RIGS

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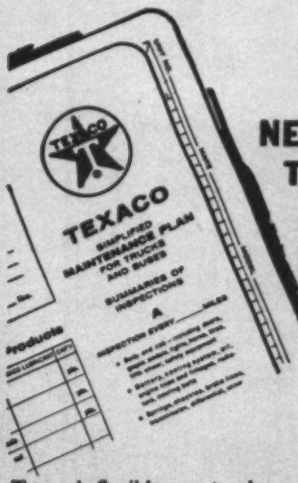
- How to use lube records to make your rig more valuable.
- Special purpose lube rigs.
- Pros and cons of mobile and centralized lubrication.

What does it take to make a mobile lube rig? What do you put on it? How do you use it? The questions have been coming in so fast lately that Texaco has devoted a whole issue of its magazine, *Lubrication*, to answering them: the March 1960 issue, titled "Mobile Lubrication Equipment."

Lubrication is a major factor in cost control, and lube rigs can be a major factor in thorough maintenance, so send for your free copy of the March *Lubrication*. Supply of these valuable booklets is limited, so if you want one, send in your request *now* to Texaco Inc., 135 East 42nd Street, New York 17, N.Y., Dept. **NR-11**



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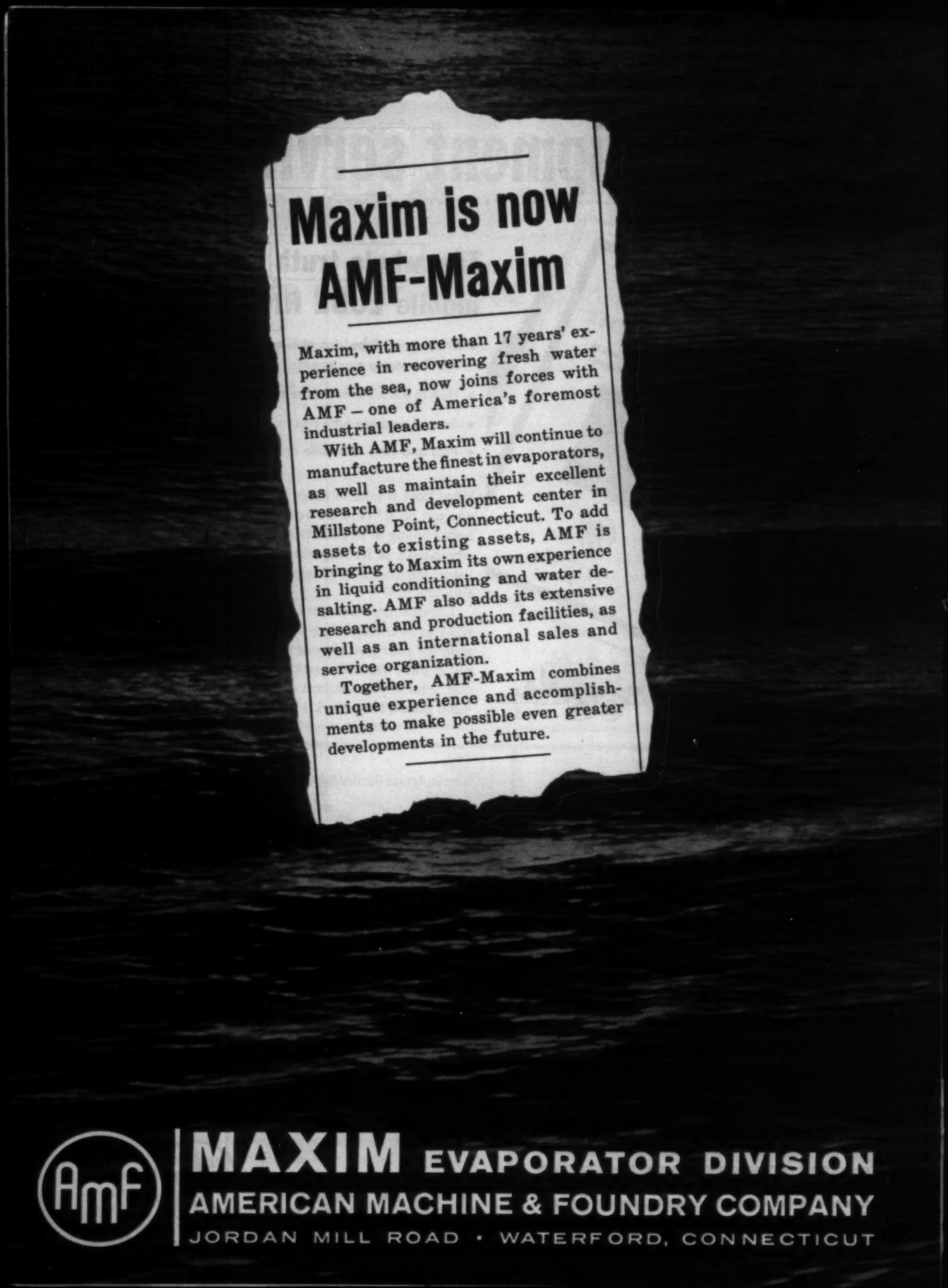
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Reader Comment

Standard Not Rescinded

SIR—Over the years your reports of the annual meetings of the American Society for Testing Materials have given good coverage of the society's activities. We have valued them greatly and have recognized that they contribute much in advancing the society's work. With one exception the coverage of this year's meeting (ENR July 7, p. 26) continues in the same vein.

This report singles out for headlining the society's specifications for asbestos-cement pipe, and in doing so makes statements that are not only misleading, but are not factual.

There was no action taken at the annual meeting to rescind the asbestos-cement pipe specifications. The specifications (C 296 and C 428), as approved for publication last year, remain in full force, although hereafter they will contain a note to the effect that the specifications are under review in the committee.

What was done was that Committee C-17 on Asbestos-Cement Products withheld from its 1960 annual report a recommendation for further revision of the two specifications so that its subcommittee on pipe might study the specifications in the light of complaints that had been registered with the Department of Justice by certain foreign producers. There has been no "restraint-of-trade complaint" or suit instituted against the society. The action taken was an evidence of good faith on the part of Committee C-17 and the society. The society's standards must stand or fall on their technical merits.

I am sure you would not wish to be a party to dissemination of incorrect statements which might tend to undermine the confidence that industry has in ASTM standards and the care that is taken to insure that both the producer and user have a voice in their establishment.

R. E. HESS
Acting Executive Secretary
American Society for Testing Materials
Philadelphia, Pa.

Editor's Note—We gladly "rescind" the incorrect statement. And, if it needs to be said, our confidence in the ASTM way of establishing specifications and standards remains unshaken.
(*Reader Comment continued p. 10*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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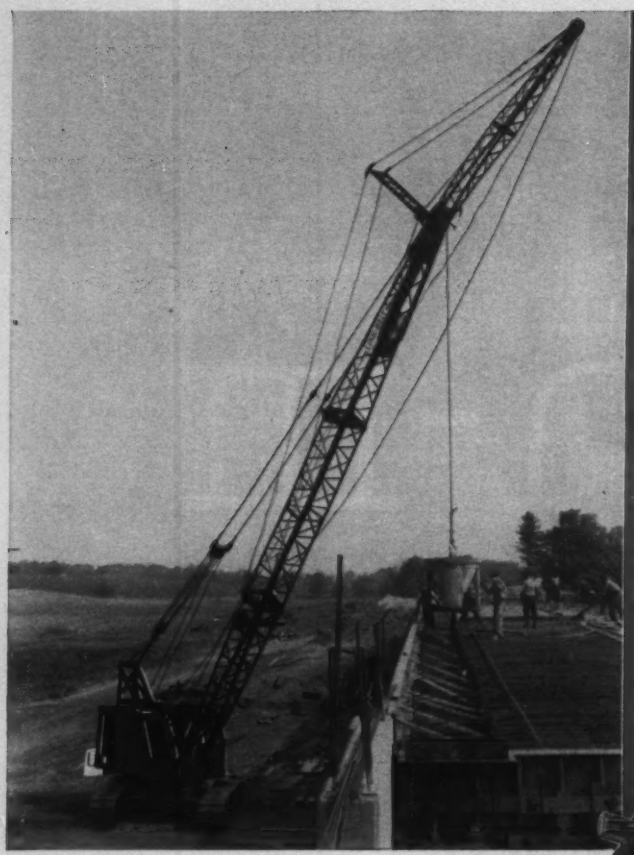
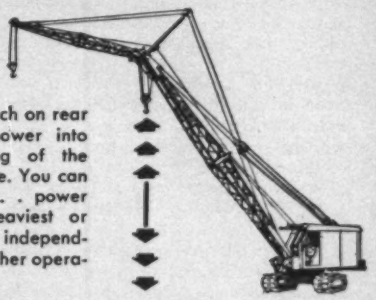
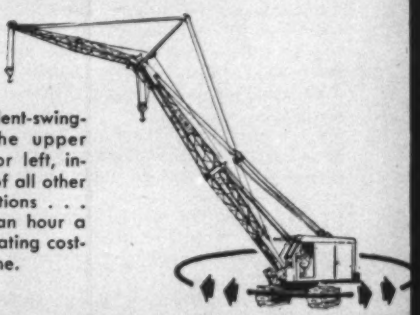


1 POWER UP OR DOWN MAIN LOAD LINE

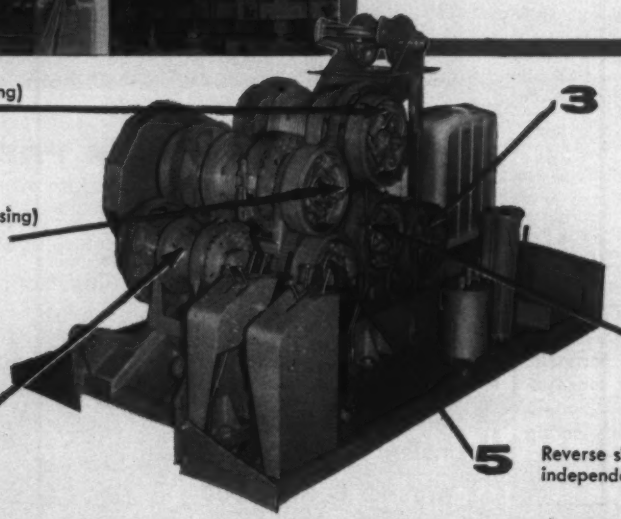


Reversing clutch on rear drum puts power into load lowering of the main hoist line. You can power up . . . power down the heaviest or lightest loads independently of all other operations.

4 SWING RIGHT OR LEFT



With independent-swing-and-travel, the upper swings right or left, independently of all other machine functions . . . saves up to an hour a day by eliminating costly shifting time.



1 Load lowering (reversing) clutch for rear drum

2 Load lowering (reversing) clutch for front drum

3 Boom lowering clutch

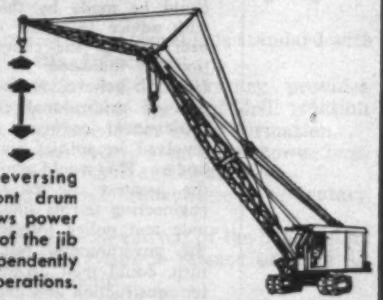
4 Reverse shaft for independent swing

5 Reverse shaft for independent travel

6 Independent third drum

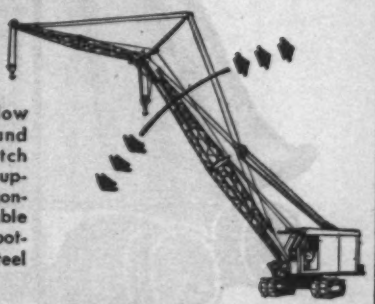
independently!

2 POWER UP OR DOWN SECONDARY LOAD LINE



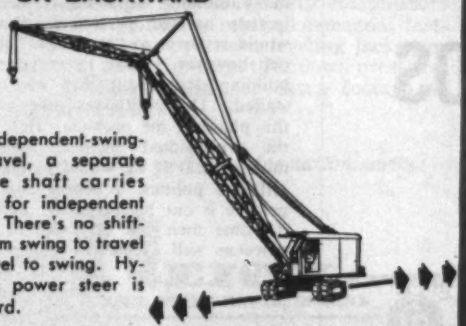
Exclusive: a reversing clutch for front drum also . . . allows power load lowering of the jib whip line independently of all other operations.

3 HOIST OR LOWER BOOM UNDER POWER



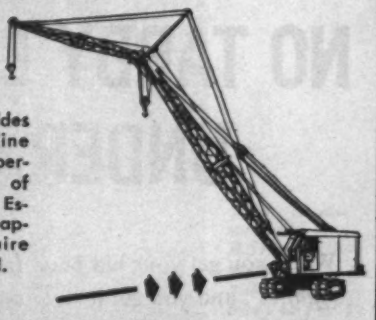
Independent high-low speed boomhoist and boom lowering clutch provide fast, safe up-and-down booming control. Especially valuable for high-accuracy spotting jobs such as steel erecting.

5 TRAVEL FORWARD OR BACKWARD



With independent-swing-and-travel, a separate reverse shaft carries power for independent travel. There's no shifting from swing to travel or travel to swing. Hydraulic power steer is standard.

6 OPERATE INDEPENDENT THIRD DRUM



A third drum provides one more load line which, again, is operated independently of all other functions. Especially useful for applications that require "snaking" in a load.

Link-Belt Speeder's years-ahead Full-Function Design is standard on all models up through the 40-ton "108" Series. Because of this exclusive design concept, your operator can have completely independent control of *all* lifting or excavating applications. He can power individual load lines up or down, crowd or retract, swing and travel, boom up or down — all individually, or in any combination, depending on the job.

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. . . Reader Comment

Up-to-Date Building Codes

SIR—You state that "building codes are no problem to architects and engineers who are content to deal only with approved materials and construction methods" (ENR June 16, p. 96). This must be a minute segment of the industry as I have never met an architect or engineer who was not hampered by archaic or biased codes. I do believe that out-of-date codes account for much of the suburban building, where codes are non-existent or not as restrictive as the old urban codes.

You make the code changing sound too difficult. With a half-way competent city engineer, a code change could be made by the town council with advice from the municipal engineer without the complicated legislation as indicated in your editorial. Here, I believe, is the most ethical part of professional engineering: the professional engineer should become involved in politics and governmental bodies. This would give his fellow man the greatest use of his professional engineering talents since it would provide and police information given to the governmental bodies, which, in turn, could then assure not only better construction and materials, but also lower costs—both lower direct costs of housing and lower taxes for governmental construction.

I agree with your statement that many building departments lack adequately trained personnel, though I would revise it to "competent" personnel; however, I have never yet seen a building department that was understaffed. The politicians take care of this phase of the problem. Here again the professional engineer would be more ethical if he would extend himself into politics. I believe that competence is our big problem. Let's face it, some men can do twice as much twice as well as other men.

D. E. SAFFORD
Park Forest, Ill.

Spark from a Live Wire

SIR—I note you were asked for assistance in developing the latent talents of certain young men in Jersey City in the production of good specifications (ENR June 16, p. 12).

Since you surely are aware of The Construction Specifications Institute, it seems that you could have suggested to Mr. Vigone that his bright young men could benefit materially from membership therein.

From zero membership in the spring of 1948, this live-wire organization has now about 4,000 members on a nationwide basis, and is dedicated to the improvement of specifications.

GEORGE CLARK
Specifications Engineer
Construction Specifications Institute
San Francisco

25% more hole per hr.

in hard limestone with high silica content

...than with competing rig

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- ...all-hydraulic top-drive rotary provides infinitely variable speed of drill rotation – the right speed for every formation.
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- ...no kelly bar – in and out of the hole faster.
- ...instant safety torque release protects all drive components.

REICHdrill has built a reputation for keeping maintenance costs low; footage records high.

And these additional REICHdrill features help set drilling records: masts incline for angle drillings; CP heavy-duty compressors assure plenty of air to meet all demands; fast-acting, ram-type hydraulic leveling jacks permit use of most rig weight for down pressure; CP "Air-Blast" Bits for extra footage in toughest formations.

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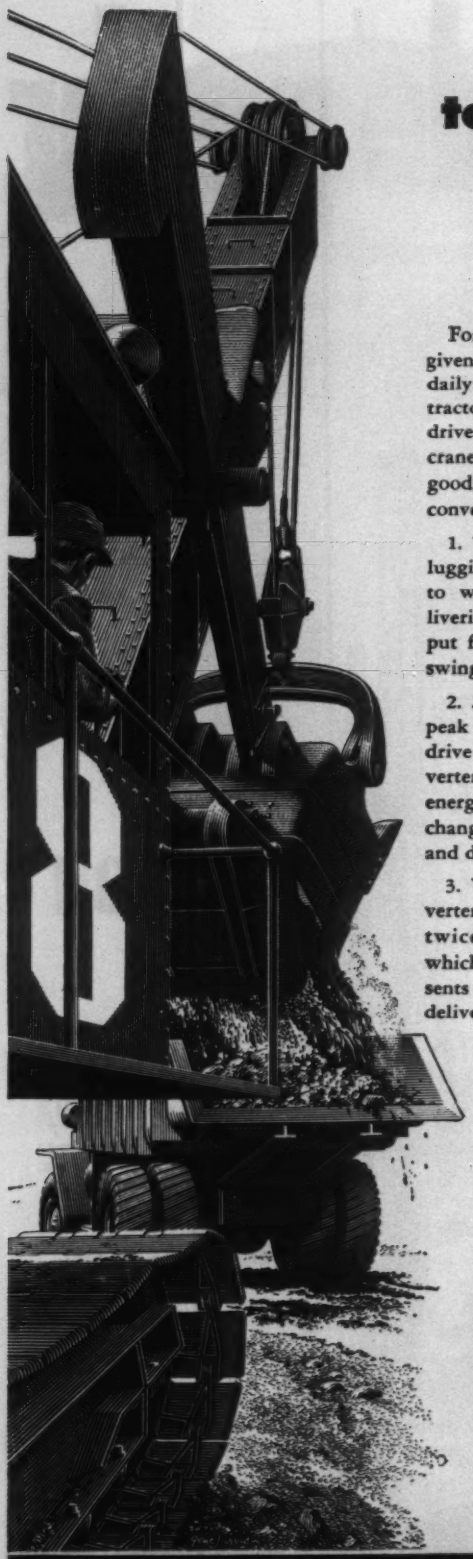


Here's why torque converter equipped machines do *more* work at *lower* operating cost

For higher work capacity on any given load, and for greater all-round daily production, more and more contractors are specifying torque converter drives in their new excavators, erecting cranes and loaders. And here are five good, profitable reasons why the torque converter is the preferred type of drive:

1. The torque converter eliminates lugging and stalling . . . permits engines to work at maximum efficiency delivering constant high-horsepower output for heavy digging loads and fast swinging.

2. *Smooth* converter power reduces peak loads throughout the machine's drive train because fluid within the converter absorbs much of the impact energy caused by quick drum speed change . . . thus protecting *both* driving and driven equipment.

3. When necessary, the torque converter smoothly delivers approximately twice normal torque to the drum, which, at slow digging speeds, represents an important advantage in power delivered to the dipper.

4. Cable life is extended since no sharp impact loads ever reach cables through the torque converter . . . constant line tension is maintained . . . there's no jerking or snapping.

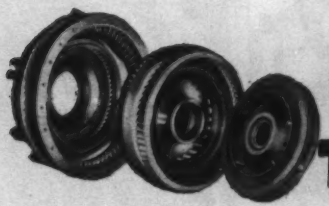
5. An infinite variety of ratios is available to work with . . . permitting smooth, accurate, *safe control* of loads and delicate "inching" and "holding" under power . . . as well as adjusting for wide variations in dipper loading, substituting greater digging effort for speed, when required.

Wherever earth and rock are moved, wherever steel is erected, you'll find contractors using these five advantages . . . *to convert their horsepower into greater-than-ever profits!*

• • •

Twin Disc Torque Converters—*three-stage* or *single-stage*, from 30 to 1000 hp—are available from all leading manufacturers of heavy-duty machines. Be sure to specify one in your next unit. Take advantage of the five reasons why torque converter equipped machines do *more* work at *lower* operating cost.

Twin Disc is the world's leading manufacturer of friction clutches and fluid couplings for heavy-duty industrial applications . . . and the only manufacturer producing *both* three-stage *and* single-stage torque converters. Because of its complete line of industrial drives, Twin Disc can offer *unbiased* recommendations for any heavy-duty power transmission application.



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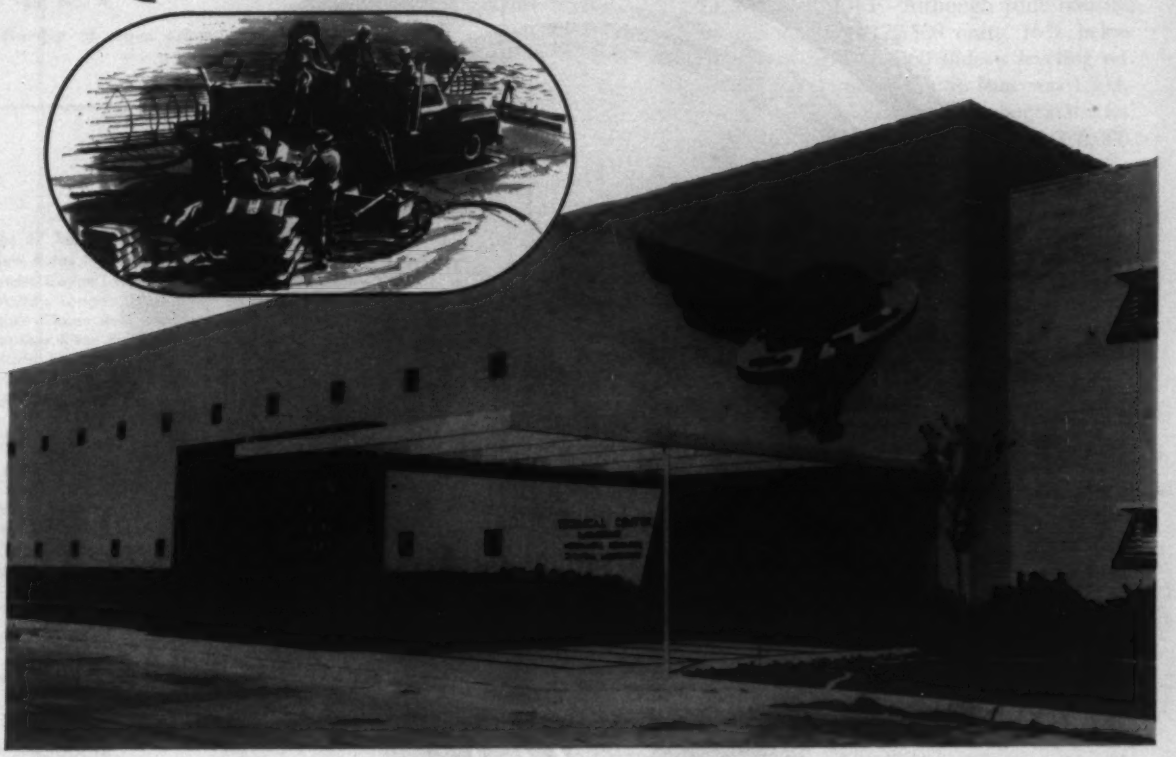

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... in the widest selection of chemicals and cements available. *Chemical Grouts* for placement in a single operation – designed for more thorough setting throughout the permeable zones than with chemical-plus-catalyst, two-step methods. *Cement Grouts* designed for continuous placement in connection with consolidation and/or plugging of permeable formations. Admixes, retarders and accelerators are available for helping to provide greater control in setting characteristics and times in various formations.

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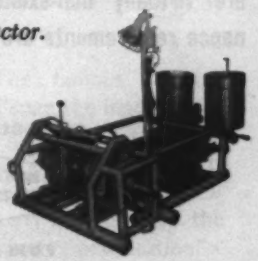
Write today for your copy of the new "Halliburton Pressure Grouting Service" Brochure No. PGS-0002.

Halliburton is financially able to perform any size grouting job as a prime or sub-contractor.



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ENGINEERING NEWS-RECORD

Vol. 165, No. 4 July 28, 1960

Number of copies printed in this issue 86,233

CONTENTS

The 67 Top Contractors of 1959 19
New Rules for Basebuilding 21
Andre Coyne Leaves Rich Design Legacy 21
World's Longest Prestressed Span 22
State Closes Rough-Riding Expressway 22
Feather River Plan Gets Support 23
World Earthquake Conference Meets 24
Offshore Platforms to Replace Lightships 26
Job Market for CE Grads Tightens 26

FEATURES

United Engineering Center Gets Welded Frame .. 30
Poor Drainage Blamed for Road Failure 36
Shale Scuttles Reservoir Design 41
Sawdust Supports Highway Over Swamp 42

INTERNATIONAL

Peru Boosts Hydro Power Output 44

NEW PRODUCTS

Air-Controlled Crane-Excavator 51
Base Spreader for Any Cat 51
Push-Button Controls for Heater 52
Spray Control for Moving Loads 52

BUSINESS AND FINANCE

Fewer A-Es in the Chips in '59 79
Contract Let for $60-Million Job 79
Less Work in Place 80

LABOR

Professionals Join Trade Union Group 82
Engineers Settle Two Disputes 82
Kansas City Strike Is Settled 83
Navy Base Not Covered by Wage-Hour Law 83

Reader Comment 2
Washington Observer 17
Unit Prices 55
Materials Prices 58
Construction Reports . 64
Statistics, Indexes ... 78
Editorials 92

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THE CONSTRUCTION WEEK

HOUSING LEVELING OFF—Although June housing starts dipped seasonally to 129,500 units, 16% below a year ago, there are signs the '60 slide is leveling off. The seasonally adjusted annual rate in June was 1,334,000 units, says the U. S. Bureau of Labor Statistics. That's almost the same as May's rate of 1,336,000.

FREAKISH AND FATAL—"The boom started to creep up, kept on going, and, before anyone could reach the controls, fell back over the cab." That's how a spokesmen for Perini Corp. described a freak accident that killed three sandhogs last week. They were waiting to go down into Callahan Tunnel, Perini's project under Boston Harbor, when the boom struck.

RENAISSANCE ROADBLOCK—Pittsburgh's great redevelopment program is in need of a new push. Construction of the important Point Park traffic interchange and the approaches to the new Fort Duquesne Bridge are held up until the trolley tracks in the park are removed. They can't be removed until the Public Utility Commission decides it has held enough hearings on the Pittsburgh Railway's petition to substitute buses for trolley cars. Three more days of hearings are scheduled this week.

COUP IN THE CONGO?—An American promoter, L. Edgar Detwiler, moved into the seething political climate of the Congo and came out last week with Premier Patrice Lumumba's blessing to develop the mineral and power resources of the country as the government's "adviser and operator." Both the United Nations and U. S. government officials deny any part in the negotiations.

ENGINEER FACULTY OUSTED—All 28 professors of egineering at the Havana University Engineering College have been dismissed by the school's pro-Castro supreme governing council for alleged "counter-revolutionary activities." All classes are suspended.

A DIFFICULT CHOICE—The Oregon State Highway Commission resolved a long dispute over the location of a section of Portland's Stadium Freeway by unanimously approving its own route, which is more than $4 million cheaper to build than the alternate advocated by Downtown Portland, Inc., a local development group (ENR June 9, p. 25).

LEANING OR FALLING?—The famous Leaning Tower of Pisa continues to challenge the ingenuity of modern soils experts. Pressure grouting of the foundation soil has failed to stop the tower's slow movement into a steadily increasing slant. Now it is reported Polish engineers will try to compact the foundation soil with "electro-kinetic petrification"—presumably something similar to electro-osmosis.

"Call FOSTER get pipe for piling...PLUS"

Order your pipe piles from Foster and you'll not only get the right type of pipe, in the exact diameter and wall thicknesses your job requires, but you'll get a big "plus." All deliveries are "fast" . . . on time. And where Foster's high-strength thin wall pile is your choice, you get your pipe piles cut to the exact lengths you need—so you'll have no wasteful cut-offs, and a fraction of the normal number of splices.

Foster's nationwide warehouses stock every kind of pipe for piling—economical thin-wall spiral-weld pipe, electricweld, lap-weld, and seamless pipe, in all diameters, and in a full range of wall thicknesses. We can supply pipe for practically every use—fabricated to your needs.

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For the new Piling Catalog EP-7A write or call **L. B. FOSTER CO.**
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PIPE • VALVES AND FITTINGS • PILING • RAIL • TRACK MATERIAL

WASHINGTON OBSERVER

• Democrats, Republicans and construction

• **You can see about where the two parties stand now on public works and use of federal funds** to pay for politically important programs. Compare the problems of the platform writers for the Democrats and the Republicans and the platforms they produced, and you can get an idea of the image they're trying to project to the voters for their approval.

The Democrats—being the outs—have an easier time promising more in their platform. They can take stands criticizing the Eisenhower Administration for its past performance and committing themselves to do more if and when they win the White House. Furthermore, the Democrats have a history that generally favors more and larger government programs, so their platform writers have no special problem justifying strong specific stands that call for more public works and construction programs of all kinds.

The Republicans in Chicago have been pulling and hauling over taking stands on public works and welfare because they have a substantial conservative wing that's much more cautious about such spending programs than even the Southern wing of the Democrats.

The Nixon-Rockefeller argument—and then the agreement—came as a result of deciding how far to depart from President Eisenhower's policies. The departure, of course, is to the side of more government programs, more spending. Vice President Nixon and Governor Rockefeller actually aren't far apart on such things, but the question is: How far and how abruptly can you depart from the Eisenhower Administration without alienating the Eisenhower vote, if there is one to inherit?

Note that despite the Nixon-Rockefeller agreement the GOP platform writers were reluctant to be so liberal on schools and housing, for instance. The delegates charged with drawing up the planks on these two key issues weren't at all willing to adopt the kind of promise that both Nixon and Rockefeller wanted them to make.

Take housing. The Democrats come out flatly for a housing goal of two million homes a year, just like that. The Republicans of course, don't go anywhere near as far.

Take national growth. The Democrats say the economy "must grow" at the rate of 5% a year, and they pledge to adopt policies to make this a reality. The Republicans want expansion and aren't necessarily for less than 5% per year expansion, but would not go anywhere near so far in pledging government policies to achieve a pre-determined rate of growth.

As the campaign develops, you'll find that the candidates come closer and closer together as to goals on construction issues regardless of what the plaforms say. But you'll find them disagreeing more sharply on how to achieve these goals and how quickly they should be achieved.

The nature of the coming argument over means, and the real differences between the candidates and between and within the parties will be the subjects of a special report on "The Campaign and Construction" in ENR next week.

HERE'S HOW BORDEN FLOOR GRATING CUTS COSTLY FIELD CORRECTIONS

Insures correct dimensions, fit, and placement . . .

1. A shop drawing of the job is submitted to the customer for approval, when necessary. This plan shows the size and shape of the grating area—how grating clears all obstructions.
2. Each finished panel is carefully checked for accuracy of dimensions.
3. Each panel is plainly marked with its number to insure quick, easy installation.
4. The entire platform is laid out on our shop floor. Over-all dimensions and obstruction openings are checked against shop drawings.
5. Erection diagram showing panel mark numbers is supplied for field installation.

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Write today for free 16-page catalog showing all basic types of grating; more than 30 dimensional drawings of sub-types; eight safe load tables for steel and aluminum grating.

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Here Are the Biggest . . .

(over $150 million in new business, domestic and foreign)

Bechtel Corp.	Kaiser Engineers
Daniel Construction Co.	Morrison-Knudsen Co., Inc.
Ebasco Services, Inc.	Perini Corp.
George A. Fuller Co.	Raymond International, Inc.
Johnson, Drake & Piper, Inc.	Turner Construction Co.
J. A. Jones Construction Co.	Walsh Construction Co.

The 67 Top Contractors of 1959

Sixty-seven construction companies signed up new business of $25 million or more in 1959. This compares to a total of 77 contractors who made ENR's top-contractor list in 1958 with that volume (ENR Apr. 30, 1959, p. 21).

ENR's top-contractor list is based on publicly reported contracts. The basic ENR listing (see p. 20) excludes both contracts for jobs outside the U.S., and awards to domestic or overseas subsidiaries.

Of the 67, a dozen had total volume of more than $150 million (see table above).

Totals include both joint ventures and individually held contracts, the former being credited at the full amount to each member of a joint venture. The value of joint ventures is not prorated.

All ENR's contract figures are for prime contracts.

Minimum size of contracts reported by ENR last year were:

- Water supply, earthwork, waterways—$53,000.
- Other public works—$88,000.
- Industrial buildings—$110,000.
- Other buildings—$400,000.

ENR this year broadened the scope of the top-contractor compilation. These new elements have been added to the report: The contractor's own computation of prime contracts for domestic work signed up in 1959; and his total of this volume added to foreign volume and the volume of wholly owned subsidiaries.

To obtain the additional information, ENR queried all companies that logged $25 million or more in new business according to the reports in the publication's statistical file. All but 18 of those companies responded to the questionnaire.

In many cases, the companies' new-contract figures agreed with those of ENR; in others, the companies' totals were different. The tallies differ for many reasons, including changes that increased or lowered the cost after the original agreement was signed, or additions to a contract after the first report was filed.

Major reason for differences, however, results from contracts that are not reported either to ENR or other sources in the public domain. In such cases, usually at the clients' request, the individual total of the contract is not credited to that portion of the contractor's volume that is publicly reported. However, companies replying to ENR's survey could revise the ENR volume figure without revealing the size of individual contracts otherwise unreported. These figures appear in the third column of the table on p. 20. Where a total does not appear in that column, the contractor's figure either agreed with ENR's or the contractor did not respond to the survey.

The fourth column shows a contractor's total volume as he reports it, which comprises the total in the second column added to his computation of new 1959 volume of foreign contracts and contracts of subsidiaries in the U.S. or abroad. Where a total does not appear in this column, either the contractor did not respond to ENR's query or the company had no foreign work or no subsidiaries.

The dozen construction companies that obtained more than $150 million in new business in 1959 hit that total by way of ENR's basic contract awards reports, or on the basis of their own computation, which in some cases includes foreign work and the volume of their subsidiaries.

By any measure, however, Morrison-Knudsen Co., Inc. of Boise, Idaho, is the biggest contractor. ENR's data credit this company with $358,306,868 in new contracts during 1959. The total includes joint ventures credited at full value, not prorated among members.

The company's figure is $433,109,000, including joint ventures at full value and contract totals previously unreported to any outside source. Adding this total to new contract volume of subsidiaries both in this country and abroad, shows M-K to the top of the list with a total of $715,310,000. The total includes M-K's wholly owned subsidiary, The H. K. Ferguson Co. of Cleveland, which is also listed in its own right in the top-contractor list.

Although the largest construction company, M-K is geared to take any size contract, small or large.

The largest contract obtained in 1959 was for $93,277,690—the Morrison-Knudsen-sponsored joint venture for Wanapum Dam on the Columbia River in Washington. Other members of the venture are Kaiser Engineers Div. of Henry J. Kaiser Co., Oakland, Calif.; Macco Corp., Paramount, Calif.; Raymond International, Inc., New York City; and F & S Construction Co., Butte, Mont.

Smallest contract won by M-K was for $22,000. Job is quarrying and stock-piling rip rap material for the Great Northern Railway Co. of St. Paul, Minn.

(Turn the page)

Here are the top contract winners of 1959 . . .

(Story on p. 19)

	Company	Prime U. S. Contracts *Includes joint ventures: Publicly Reported to ENR	Prime U. S. Contracts *Includes joint ventures: Company's Figure	Total Contracts Including Subsidiaries and Foreign (Company Figures)
1.	MORRISON-KNUDSEN CO., INC., Boise, Idaho	$358,306,868*	$433,109,000*	$715,310,000*
2.	KAISER ENGINEERS, Oakland, Calif.	235,391,074*	233,802,000*	274,467,000
3.	GEORGE A. FULLER CO., New York City	233,288,591		
4.	DANIEL CONSTR. CO., INC., Greenville, S. C.	226,040,554		
5.	TURNER CONSTRUCTION CO., New York City	164,270,650*	164,270,650*	
6.	JOHNSON, DRAKE & PIPER, INC., Minneapolis	154,513,938*	154,513,938*	
7.	BECHTEL CORP., San Francisco	150,654,400	290,000,000	
8.	PAUL HARDEMAN, INC., Stanton, Calif.	130,594,799		
9.	PETER KIEWIT SONS' CO., Omaha	117,547,601		
10.	PERINI CORP., Framingham, Mass.	109,255,199*	113,969,223*	225,245,639
11.	J. A. JONES CONSTRUCTION CO., Charlotte, N. C.	106,860,223*	115,373,500	163,942,100
12.	WALSH CONSTRUCTION CO., New York City	105,437,421	219,701,063*	
13.	RUST ENGINEERING CO., Pittsburgh	102,224,000	102,224,000	
14.	MACCO CORP., Paramount, Calif.	100,718,080		
15.	RAYMOND INTERNATIONAL, INC., New York City	99,583,340*	99,899,000*	216,247,000
16.	F. & S. CONTRACTING CO., Butte	93,420,895		
17.	SLATTERY CONTRACTING CO., INC., Maspeth, N. Y.	87,187,722	116,000,000	
18.	THE H. K. FERGUSON CO., Cleveland	84,184,300	135,195,000	
19.	C. H. LEAVELL & CO., El Paso	76,378,474	76,378,474	
20.	MACDONALD CONSTRUCTION CO., St. Louis	74,568,722		
21.	ROBERT E. McKEE, GEN. CONTR., INC., El Paso	69,394,309		
22.	SCOTT CO., Oakland, Calif.	67,047,667*		78,047,667
23.	M. W. KELLOGG CO., New York City	66,000,000	66,000,000	
24.	EBASCO SERVICES, INC., New York City	65,000,000	192,684,000	235,184,000
25.	FRUIN-COLNON CONTRACTING CO., St. Louis	62,878,187*		64,154,089
26.	GIRDLER CONSTR., CHEMETRON CORP., Louisville	60,500,000		
27.	CHARLES H. TOMKINS CO., Washington, D. C.	58,141,421*	58,778,417*	
28.	HUDSON ENGINEERING, INC., Houston	56,226,500		
29.	GUY F. ATKINSON CO., San Francisco	53,779,701*	58,319,321*	
30.	KOPPERS CO., Eng. & Constr. Div., Pittsburgh	51,800,000	51,800,000	
31.	J. W. BATESON CO., INC., Dallas	45,652,400		
32.	GUST K. NEWBERG CONSTRUCTION CO., Chicago	45,349,722	54,665,432	56,653,432
33.	S. J. GROVES & SONS, CO., Minneapolis	44,255,381*	44,255,381*	
34.	W. S. BELLOWS CONSTRUCTION CORP., Houston	41,827,000*	41,827,000*	
35.	L. E. DIXON CO., San Gabriel, Calif.	40,849,885*		
36.	SALEM-BROSIUS, INC., Carnegie, Pa.	40,500,000		
37.	GILBANE BUILDING CO., Providence	38,731,620	47,374,250	
38.	THE LANE CONSTRUCTION CORP., Meriden, Conn.	37,800,609	51,211,299	
39.	TERMINAL CONSTRUCTION CORP., Wood-Ridge, N. J.	35,836,750	35,892,750	
40.	NORAIR ENGINEERING CORP., Washington, D. C.	35,369,257	36,295,000	37,395,000
41.	CONTRACTING & MATERIALS CO., Evanston, Ill.	34,531,630*	49,300,000*	
42.	UTAH CONSTRUCTION CO., San Francisco	33,932,820*	27,113,962*	109,417,277
43.	TAYLOR CONSTRUCTION CO., Miami	32,500,000	32,500,000	
44.	CARL M. HALVORSON, INC., PORTLAND, Ore.	32,381,096*	32,381,096*	
45.	LAWRENCE W. McLAUGHLIN, Portland, Ore.	32,381,096		
46.	HYDE CONSTRUCTION CO., Jackson, Miss.	31,972,052		
47.	BROWN & ROOT, INC., Houston	31,289,886	99,143,619	135,716,919
48.	CONSOLIDATED ENGINEERING CO., INC., Baltimore	30,939,600		
49.	HUBER, HUNT & NICHOLS, INC., Indianapolis	30,794,659	33,200,195	37,300,195
50.	HENRY C. BECK CO., Dallas	30,349,658	30,219,467	
51.	M. H. GOLDEN CONSTRUCTION CO., San Diego	30,140,585*	30,140,585*	
52.	GREEN CONSTRUCTION CO., San Mateo	30,038,062*	30,038,062*	
53.	WINSTON BROS. CO., Minneapolis	30,038,062*	30,595,525*	
54.	DRAVO CORP., Pittsburgh	29,945,311	46,061,129	49,871,063
55.	McCLOSKEY & CO., Philadelphia	29,726,354	29,726,354	
56.	MERRITT-CHAPMAN & SCOTT CORP., New York City	28,759,895	78,173,714	
57.	THE LUMMUS CO., New York City	28,000,000		
58.	STOLTE, INC., Oakland, Calif.	27,828,214*		
59.	MALAN CONSTRUCTION CORP., New York City	27,414,379	35,270,000	
60.	H. B. ZACHRY CO., San Antonio	27,411,279*	28,095,815	34,008,615
61.	FOSTER & CREIGHTON CO., Nashville	27,190,063	27,190,063	
62.	GEORGE J. BEEMSTERBOER, INC., Chicago	27,000,000		
63.	BLOUNT BROS. CONSTRUCTION CO., Montgomery	26,918,741	26,918,741	
64.	GEORGE M. BREWSTER & SON, Bogota, N. J.	26,765,447	26,789,500	27,602,541
65.	MARTIN K. EBY CONSTRUCTION CO., INC., Wichita	25,685,728	32,376,688	32,405,203
66.	GORDON H. BALL, Danville, Calif.	25,492,771		
67.	WILLIAMS CONSTRUCTION CO., San Jose, Calif.	25,000,000		

* Includes H. K. Ferguson Co., also listed separately

To untangle the missile program . . .

New Rules for Basebuilding

Important policy changes shaped up last week as the Pentagon attacked the roadblocks in the lagging construction program for intercontinental ballistic missile bases.

The first four Atlas ICBM bases—Warren Air Force Base, Wyo.; Offutt AFB, Neb.; Fairchild AFB, Wash., and Forbes AFB, Kan.—won't be combat-ready until three to six months behind their scheduled completion dates (ENR July 21, p. 24).

The responsibility for this country's lag in the missile race has been laid to a slowdown in base construction. Manufacturers of the Atlas ICBM say they have plenty of missiles produced, but there are no launchers now available to put them in.

Because much of U. S. defense strategy is based on these completion dates, the Department of Defense has sent down orders aimed at shaking the kinks out of the missile base construction program.

The latest changes:

• The Corps of Engineers set a new rule requiring a prime contractor on an ICBM job to do a minimum of 15% of the construction work himself. It also disclosed plans to "tighten up" on examination of bids before awarding prime contracts and to make a "closer review of the capabilities" of a prime's subcontractors.

• The Los Angeles Engineer field office—which has had charge of ICBM base construction since it was created in July, 1959—has been renamed the "Ballistic Missile Construction Office." A general has been put in charge, Maj. Gen. Alvin C. Welling, former District of Columbia engineer commissioner. The staff of military and civilian personnel under General Welling's command will be expanded from 30 to about 150.

• The Air Force assigned management responsibility for ICBM site activation to the Air Materiel Command in a move to clarify over-all supervision of the base program.

The Corps of Engineers' new policy on contracting reflects Air Force pressure for tighter direction over construction contractors. The 15% rule on primes stems from Air Force dissatisfaction that the prime award on the Offutt Air Force Base site, the biggest problem project.

The contract went to the Malan Construction Co., New York City, a so-called "job broker," which farmed out 90% of the work to subcontractors (ENR July 7, p. 28).

The Air Force was also annoyed by the performance of some of Malan's subcontractors. An electrical subcontractor, for instance, was recently discharged for failure to meet contract commitments.

Malan subbed work on the $12.8-million project out to 46 contractors. At one period during the Offutt base construction, 30 subcontractors were working in an area only two blocks square. Scheduling and control got so far out of hand that the Corps of Engineers called in an experienced ICBM base-builder, George A. Fuller Co. of Los Angeles, as a consultant to untangle the job.

The Engineers' new ICBM base expediting office will absorb the present Los Angeles Engineer field office. Initial strength of General Welling's agency will be 25 officers and 125 civilian employees.

Under the drive to expedite construction work, the Engineers assigned 20 additional officers this month to ICBM sites. Forty more men will be transferred shortly from lower priority assignments to key jobs at missile base construction sites.

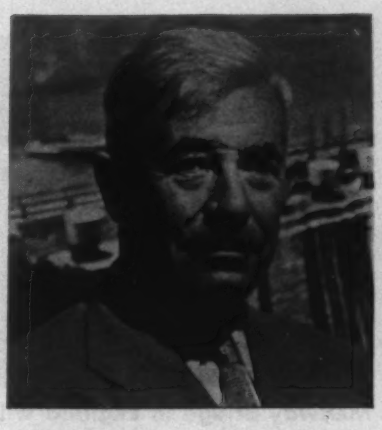
The clarification of Air Force command over the over-all program will have no direct implication for construction contractors, Pentagon officials say. But it's obvious that the AMC representative will now be the top-ranking military authority at each construction site. Presumably, he will have the power to make binding decisions on local jurisdictional union disputes and other squabbles.

In the past, decisions at each base had to be coordinated through representatives of five separate military commands, which meant considerable delays before local problems could be resolved.

Maj. Gen. Thomas P. Gerrity has been named chief of AMC's Ballistic Missile Center at Englewood, Calif. He will "assume responsibility for management of the operation sites during the construction phase and will exercise this management of the activation program from the time the site is selected for an ICBM installation."

AMC's responsibilities: monitoring the site during the construction phase; management of the installation and checkout of support systems; and base support to contractors and negotiation of all base support agreements.

Army's Corps of Engineers will continue to have authority to advertise for construction bids and to award construction contracts for the brick-and-mortar work.



Andre Coyne Left Legacy Of Dam Design Advances

The death of Andre Coyne in Paris last week at the age of 69 ended the career of one of France's greatest engineers. His contributions to the art and science of dam design were recognized and utilized throughout the world.

During his professional lifetime of nearly a half century he was responsible for the design of 65 major dams, most of them in France, but others in Morocco, Algeria, Rhodesia, India, Indonesia and elsewhere.

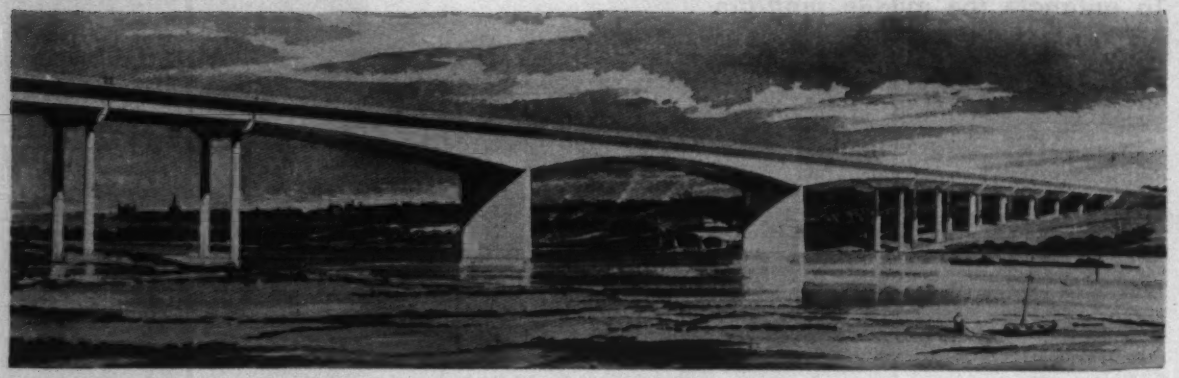
Many of these dams incorporated notable design advances and innovations. Mr. Coyne was a particular advocate of concrete arch dams and used them for safety and economy, wherever he deemed site conditions favorable.

The last six months of Mr. Coyne's life were greatly saddened by the failure last December of the Malpasset Dam in southern France, which he had designed. Investigators have pronounced the design of the dam itself to have been adequate in every respect, and attribute its collapse to a shift in one of the rock abutments caused by sliding on a thin clay-filled seam that was undisclosed by the foundation boring (ENR Apr. 7, p. 25).

The last great Coyne-designed dam to be completed was the Kariba Gorge arch in Rhodesia, which was dedicated in May of this year. Approaching completion is Roselend Dam in the French Alps, a unique combination of the arch and buttress types. Other notable Coyne-inspired advances include the ski-jump spillway, prestressed cables to tie dams to their foundations, and the development of the domed arch.

Mr. Coyne's early career was spent in the service of the French government, but in 1947 he set up his own consulting firm of Coyne and Bellier whose clients have come from countries on every continent.

From 1946 to 1952 Mr. Coyne was president of the International Commission for Large Dams.



Medway Bridge in England will have . . .

The World's Longest Prestressed Span

The Medway Bridge in southeast England will have the world's longest prestressed concrete clear span, 500 ft. Longest span of this type now in existence is the Coblenz Bridge over the Rhine, with a central span of 403 ft.

Total length of the new structure, including approaches, will be 3,270 ft. Two 312.5-ft spans flank the 500-ft main span. There are 18 shorter approach spans, eleven on the west side. The bridge will carry four lanes of highway traffic, two bicycle paths and two sidewalks.

Freeman, Fox and Partners, London consulting engineers, designed the superstructure with independent twin girders of cellular design. Each of the two side spans will cantilever a distance of 200 ft from the main piers into the center span; the cantilevers will support a 100-ft suspended span, 100 ft above the water. Girders will be 35 ft deep at the piers and 8 ft deep at mid-span. The suspended span will comprise two sets of four precast, prestressed beams weighing 95 tons each. The reinforced concrete deck will be cast in place.

To verify the cantilever design, engineers built and tested a 1:14 scale model under live load. Particular attention was given to stresses in the deep, slender webs.

The joint venture of J. L. Keir and Company, Ltd., and Christiani and Nielsen, Ltd., won the contract on a bid of about $6,500,000. Construction is expected to take about 2½ years.

Construction will be carried out with a minimum of interference to river traffic by using traveling forms supported on the ends of the cantilevers.

State Closes Rough-Riding Expressway

The New York State Department of Public Works has closed temporarily a 1.2-mile section of the Brooklyn-Queens Expressway six months after it opened because of roughness of the asphaltic concrete wearing surface. This portion of the expressway is an elevated six-lane divided highway.

The contractor has been ordered to remove and replace the wearing surface on the three westbound lanes. The wearing surface is composed of 3 in. of asphaltic concrete—a 2-in. binder course and a 1-in. surface course.

Steel "dams," part of the transverse joints in the concrete deck of the elevated structure, are spaced at 60-ft intervals and extend upward through the wearing surface. Plans require the asphalt surface when compacted, to be at the same elevation as the top of the joint. Observers reported that under traffic a "dip" from ¼ to ½ in. deep developed over nearly every transverse joint in the westbound lanes.

A spokesman for the Department of Public Works says the contractor had been ordered to re-do the work at his own expense because the finished pavement did not meet specifications relative to smoothness and riding qualities. Based on the area of pavement involved, the estimated cost of the repairs is $75,000.

Workmen remove asphaltic concrete adjacent to transverse joint.

Gull Contracting Co. of Flushing, N. Y., laid the surface as a part of a joint venture with Horn Construction Co. The contractor reportedly believes the surface to have been placed in accordance with the line and grade shown on the plans.

Design and supervision of construction on the project were done by Andrews & Clark, New York consulting engineers.

Principals in the consulting firm would not comment on the cause of the rough-riding surface.

The Brooklyn-Queens Expressway has been completed from the Brooklyn-Battery Tunnel Plaza to the Long Island Expressway, a distance of 10 miles, at a cost of $126 million.

Feather River Plan Gets Support

- **Plan is sound but recommended phasing calls for aqueduct first, Oroville Dam later.**
- **First-phase bonds will sell with proper scheduling and need not impair state's credit.**

By Lauress L. Wise

Construction of California's giant Oroville Dam may be delayed 10 years or more if the California Department of Water Resources follows preliminary engineering and financial recommendations it released last week. However, the Feather River Project as a whole is judged feasible from both engineering and financial standpoints, subject to qualification on some points.

The findings represent important support for the state's ambitious water plan. The aqueduct system was attacked as financially unfeasible in a minority engineering report that was presented to the state early this year (ENR Jan. 21, p. 27).

Charles T. Main, Inc., a Boston consulting engineer firm, and Dillon, Read & Co., New York City financial consultants, prepared the reports. They were made public by California Water Resources Director Harvey O. Banks. Final versions of both the "interim" reports will follow later this year, before the November referendum on a $1.75-billion water bond issue.

The recommendations call for splitting construction of the works into two parts with Oroville Dam falling in the second part. This is contrary to the state agency's present plans.

• **Aqueducts first**—Charles T. Main, Inc., suggests immediate construction of the aqueduct system, capable of delivering 2.5 million acre-ft a year from the San Joaquin-Sacramento delta south to meet the estimated water needs of 1980. This amount of water can be produced without building Oroville Dam, according to the report.

Canals and tunnels would be sized for 1990 water needs (3.75 million acre-ft), but pumps, siphons and power plants would be phased for construction to keep pace with water use.

Stage 1 of the project would cost $1.3 billion; Stage 2 would cost $372 million. Neither figure includes escalation for future inflation.

***Larry Wise,** ENR's West Coast Editor has been following the twists and turns of California's vast Feather River Project since the undertaking first came under serious study eight years ago.*

The Main report acknowledges that the Oroville postponement would be a major change in the state program but points out that Oroville water would not actually be needed until about 1980. "It is not feasible," the report concludes, "to charge water users for interest on bonds during this period when there is no sale for and therefore no revenue from Oroville water."

Mr. Banks agrees that the water revenue producing phases of the work should be started first and he is recommending to Gov. Edmund G. Brown that the aqueduct system be started immediately. (This means sometime in 1962, to allow time for negotiating water service contracts. The law requires that 75% of them be in force before construction starts.) He declared, however, that everything possible will be done to start construction of Oroville Dam in 1962, as presently scheduled, and finish it by 1969.

Mr. Banks says two alternates to present Oroville Dam plans are under consideration: Financing the construction with revenue bond proceeds; and constructing it in stages.

The first alternate appears an unlikely possibility. Present estimates indicate power revenues, the only revenue in prospect until 1980, would fall short of making the dam self-liquidating.

The second alternate could provide flood protection at the start with a low dam. The structure could then he enlarged later for power generation and water conservation.

• **Power study continues**—There are at least two factors—power and flood control—that might change the Main firm's stand on Oroville Dam or that might cause the state to go ahead with the dam despite a recommendation for delay.

The engineering firm is still studying the power economics of the project. And the report acknowledges that "flood control provides the only real basis for immediate construction."

Much of the damage and loss of life in the Yuba City area in the 1955 floods could have been prevented if Oroville Dam had been completed at the time.

But the Main report warns that if the dam is built and escalation follows recent trends upward, there will not be enough money to complete the aqueduct. The state will be committed, however, and must be prepared to authorize additional funds to complete an aqueduct system capable of operating to produce revenues.

• **Dillon, Read concurs**—This thought was echoed in the Dillon, Read & Co. report. The financial consultants believe Stage 1 can be built with a 23% margin of safety between estimated construction costs and available funds. But the report says there are not sufficient funds to also build Stage 2, which would include Oroville Dam.

Dillon, Read predicts that the bonds are saleable. Based on marketing about four-fifths of the bonds in a one-year period, the firm reports: "In our opinion, they can be marketed at reasonable cost and without material impact upon the state's credit, if they are properly scheduled and if the state refrains from stepping up its present rate of borrowing for other purposes."

Dillon, Read dodged the issue of whether or not the project will be self-liquidating. More studies by the consulting engineers are needed, the firm says.

Conclusions regarding contracts for water and power sales are left for the final report by the financial consultants. They warned, however, that revenues must be such that operation, maintenance and replacement costs of the system must by law be paid as they are incurred. Water-bond service payments, on the other hand, can be met from the state's general fund if necessary.

• **Contracts a key issue**—The form of contract may play a vital part in the success of the bond election. The Metropolitan Water District of Southern California, which will be one of the state's major water customers, has submitted a proposed contract form to the state.

Governor Brown says MWD has offered to support the bond election if the state approves its contract form. The Water District denies that its support is contingent on state approval and points out that it simply feels the state is dragging its heels in coming up with a proposed contract.

The MWD proposes that power revenues be applied for repayment without regard to whether the water is used on lands in excess of the federal 160-acre limitation. The district also wants the cost of water transportation facilities apportioned on the basis of allocated flow capacity. This would shift some of the burden of high peak-flow canal capacity from the urban users in MWD's five-county area to irrigation users, who need the high flows.

Second world conference adds to literature on . . .

How to Design Against Earthquakes

By Henry J. Degenkolb

A substantial addition to the literature of earthquake-resistant design came out of the Second World Conference on Earthquake Engineering concluded last week in Tokyo. A total of 118 technical papers were delivered at the eight-day meeting, which drew participants from 27 countries.

All papers will be published in a three-volume set of the conference proceedings, which can be purchased at $17.00 per set, including postage, from the Intelligence Section, Science Council of Japan, Ueno Park, Taito-ku, Tokyo.

The attendance represented a notable growth of interest since the first conference, which was held at the University of California, Berkeley, four years ago (ENR July 26, 1956, p. 32). Then, only 16 countries were represented.

The second conference was organized by the Science Council of Japan in cooperation with the Seismological Society of Japan, the Japan Society of Civil Engineers and the Architectural Institute of Japan. Basic costs of the conference were borne by an association of Japanese industrial companies. The chairman of the conference was Dean Kiyoshi Muto, of the faculty of engineering of Tokyo University.

U. S. participation was spearheaded by the Earthquake Enginering Research Institute, which originated the Berkeley conference four years ago. Prof. George W. Housner (California Institute of Technology) is president of EERI and John Rinne (Standard Oil Co. of California) was chairman of the committee of cooperation with the Japanese conference organizers.

Except for Japan, the U. S. had the largest delegation (37 members) of any of the countries represented. The Philippines had 12 members in its delegation, Mexico and Chile had seven, Iran and Turkey five, and New Zealand four. Other countries sent from one to three men each. The Iron Curtain countries sent a total of seven participants—from the USSR, Rumania and East Germany. The Republic of China (Formosa) sent two delegates, but Red China was not represented.

CATFISH in the Earth's core causes earthquakes, according to Japanese legend. Lines on its body represent seismic waves.

The papers were arranged in five classifications: (1) Relation of soil and foundation conditions to the earthquake problem; (2) analysis of structural response and instruments; (3) seismology and earthquake ground motion; (4) earthquake-resistant design, construction and regulations; and (5) recent strong motion earthquakes and resulting damage.

The papers ran the gamut from Earthquake Resistance of Traditional Japanese Wooden Structures by Ryo Tanabashi (Japan) to Design of Nuclear Power Reactors Against Earthquakes by George W. Housner (U.S.). Special attention was accorded reports on the recent earthquakes in Morocco, Iran and Chile.

Karl V. Steinbrugge (U. S.), Rodrigo Flores (Chile) and Ryutaro Takahashi (Japan), representing three separate inspection teams that visited Chile, reported that despite poor soil conditions and the tidal wave, well built structures employing modern methods of earthquake-resistant construction fared quite well. A general conclusion from all of the other reports was that the bulk of the damage caused by earthquakes can be traced to neglect of designers and builders to make use of readily available information on earthquake-resistant construction.

One of the earliest known examples of earthquake-resistant design is an iron bridge built in Japan in 1888, which was described by Yutaka Tanka. Another notable Japanese paper was given by Tachu Naito covering fifty years of earthquake engineering practice. Prof. Naito, whose Industrial Bank Building, Kabuki Theater Building, and Business of Japan Building all survived the earthquake of 1923 without damage, described his early conception of the type of earthquake bracing using shear walls and rigid diaphragms. This type of bracing is now almost universally used in small and moderate size buildings and is often used on very large ones.

The largest group of papers dealt with the analysis of earthquake response of various types of structures, especially in the elasto-plastic range. K. S. Zavriev, head of the Soviet delegation, said that much research is being done at the Republic of Georgia Earthquake Center. He added that there are at present six earthquake centers in the USSR.

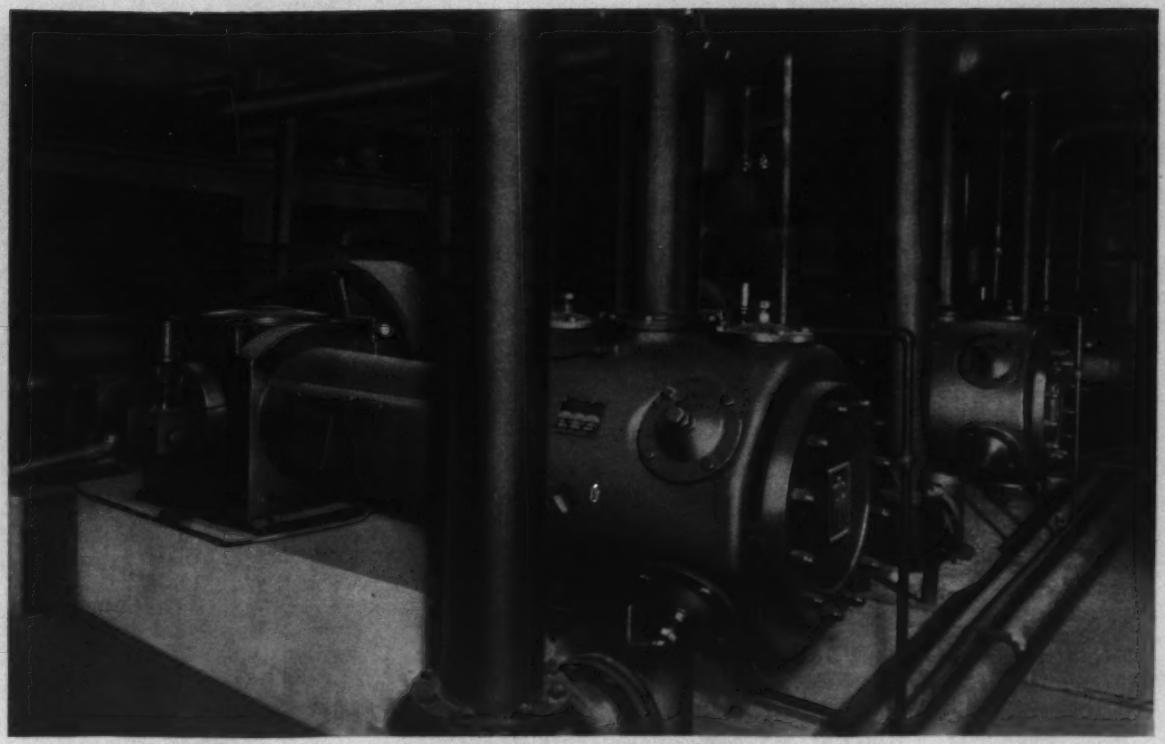
Among the corollary features of the conference were exhibits showing the latest equipment for measuring earthquake phenomena, including a strong motion instrument of the U.S. Coast and Geodetic Survey and electronic equipment for analyzing earthquake data developed by the California Institute of Technology. Models of Japanese earthquake-resistant construction for buildings, power plants and atomic reactors were also shown.

Participants in the conference, in addition to being presented with colorful, cloisonne medals depicting the legendary catfish, which causes Japanese earthquakes, were also given three unique volumes of earthquake engineering data especially developed for the conference by the engineers of Japan. They are also being made generally available as follows: (1) Earthquake Resistant Regulations of the World, available for $5.00 including postage from the same address as the proceedings; (2) Architectural Institute of Japan Building Standards, available for $6.00 including postage from Architectural Institute of Japan, 3-1 Ginza-Nishi, Chuo-ky, Tokyo, Japan; and (3) Earthquake Resistant Design of Civil Engineering structures, Earth Structures and Foundations in Japan, available for $4.00 including postage from Japan Society of Civil Engineers, Yotsuyo I-Chome, Shinjuku-ku, Tokyo.

Mr. Degenkolb, one of the U. S. representatives of the Tokyo conference, wrote this account at the request of ENR's editors. He is a partner in Gould and Degenkolb, San Francisco consulting engineering firm that has designed many earthquake resistant buildings. In 1958 he was president of the Structural Engineers Association of California.

ENR Index Is Ready

ENR's Index of Editorial Content for January through June is now being sent to those on our index mailing list. The Index is free. Copies of the '58 and '59 indexes also are available. To put your name on the mailing list, write: Indexing Department, ENGINEERING NEWS-RECORD, 330 E. 42nd St., New York 36, N. Y.



Ingersoll-Rand air power shoves tunnel through 4 miles of clay

A new water tunnel, built to meet the growing needs of the Detroit area, has been driven through 4 miles of clay by air power *alone*.

It's nothing new for compressed air to power rock drills and other equipment and to pressurize a tunnel. But on the Wayne County tunnel project, air power handled *every* job. An Ingersoll-Rand air motor powered the hydraulic system which forced the tunnel shield ahead, and when boulders blocked the way they were removed with air-powered clay diggers. I-R air motors handled the concrete liner forms, and I-R air-powered concrete vibrators were also used. Much of the air power was supplied by an Ingersoll-Rand two-stage compressor.

The tunnel was pressurized by the three Ingersoll-Rand ESH 25-psi compressors shown above. Their low headroom design simplified installation, and their exceptionally low maintenance held down the "overhead", too. These I-R compressors have many extra-value features not found in other makes: sealed frame construction which keeps out dust, and never has to be opened because running parts *never need adjustment;* full-floating aluminum bearings; full filtered pressure lubrication; and Ingersoll-Rand's famous air-cushioned Channel Valves with their unbeatable performance records.

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Fixed Offshore Platforms Will Replace Lightships

The Coast Guard will eliminate 22 of its 24 lightships and replace them with Texas tower-type structures.

Construction of the first of these fixed, offshore lighthouses will begin early next year in Buzzards Bay, Mass., near the southern approach to the Cape Cod Canal.

The Buzzards Bay tower will be a 70x70-ft- platform standing 60 ft above water level on nine cylindrical steel piles. The tower will cost about $1.3 million. Completion is scheduled for November, 1961.

Advantages of the fixed towers are cheaper construction and operation and more efficient services, say Coast Guard engineers.

The platform of the Buzzards Bay tower will house a five-man crew and necessary equipment. The roof of the quarters will serve as a helicopter landing pad. A 12-ft-dia tower rising from the platform will house a foghorn and radio beacon.

The Coast Guard's second fixed tower will replace the Brenton Reef Lightship off Newport, R. I. The $524,000 tower will be an unmanned station, its operation controlled from shore.

The 22 proposed offshore stations have been in the planning stage for three years, says the Coast Guard. The organization denied that the recent sinking of the Relief Lightship in New York Harbor influenced decision for the changeover program.

Lightships have been standing guard off the coasts of the United States for 140 years.

Job Market for CE Grads Tightens a Bit This Year

This year's civil engineering graduates are finding a favorable employment situation, although not quite as favorable as last year.

A survey by the Engineering Manpower Commission of Engineers Joint Council shows that as of May 20, 59.3% of the civil graduates had jobs and 13.1% were considering offers. Last year at that time the survey showed 63.1% already at work, 12.5% considering jobs.

This year 7.6% of the civils had no offers or plans compared with 4.3% last year. Another 8.9% are entering graduate studies—that's about the same ratio as last year's 8.4%.

The complete survey covers all either entering the military services or have other specific plans.

The complete survey covers all branches of engineering, with a sample equivalent to 39% of the class of '59.

Around the World . . .

• **More Mokelumne**—Contract was let for another 32.5 miles of the third Mokelumne aqueduct—dubbed the "Giant M" because it involves 82 miles of 81-in.-dia pipe. The $14-million award by California's East Bay Municipal Utility District went to a joint venture—C. K. F-M (a three-company combine) and Graver Tank and Manufacturing, a division of Union Tank and Car Co. The "Giant M" is a major unit in EBMUD's $283-million expansion program aimed at meeting the region's water needs beyond the turn of the century.

• **Soviets plan high dam**—The USSR is reported to be planning a 1961 start on a 2.5-million kw hydroelectric power project on the Vakhsh River in Tadzhikistan. The dam will be 984 ft high and 3,300 ft long, the reports say.

• **Toward cleaner air**—Pennsylvania's first Air Pollution Commission has been appointed. The six-member commission will have the power to curb the discharge of air contaminants. State Secretaries of Health, Forests and Waters, Labor and Industry, Agriculture and Commerce will be ex-officio members.

• **German builders in India**—A West German company probably will get the construction contract for a $40-million shipbuilding yard at Cochin, a city on India's west coast. India is believed to have asked the West German government for financial and technical assistance. India's Finance Minister, Morarji Desai, now touring Europe, is expected to meet soon with West German officials. Should negotiations succeed, Howaldswerke of Hamburg, a state-owned company, may get the job.

• **Bolivian hydro**—Bolivia is considering a $6-million hydroelectric project in the Zongo Valley near La Paz.

• **Islands in the sea**—New York City's proposed $60-million Civic Center in downtown Manhattan would be "newly created islands in a sea of traffic," according to Nathan R. Ginsberg, president of the New York Society of Architects. Mr. Ginsberg offered his own, more expensive, proposal for greater expanses of parks around both the municipal civic building and the federal office building.

• **Mall makes a comeback**—Toledo, Ohio, is making another try at a pedestrian mall this summer (ENR Dec. 17, 1959, p. 43). This year's variation allows cross street traffic to run through the three-block mall area; last year, a four-block strip was completely closed to all but pedestrian traffic (ENR Dec. 17, 1959, p. 63).

• **Road check**—Marion County, Ind., has organized a 10-man inspection team to check each county road repair project to make sure that the county is getting the materials it pays for. The County Commissioners will authorize payment only for materials that have been approved by the inspectors.

• **Cheaper on the inside**—Factory inspection of prefabricated homes instead of the field inspection required by most local building codes could save up to $2,000 per house, according to Ben Anav, president of Seaboard Homes, Inc. Mr. Anav proposes that manufacturers pay a special fee to a municipality for inspecting prefabricated homes at the plant. Houses could then be delivered to the site with plumbing, wiring and insulation already installed in floor, roof and wall units.

• **UN library**—Construction contract for a $6-million library for the United Nations has gone to the George A. Fuller Co., New York City. The library design will match that of the adjoining Secretariat. There will be three stories above ground and three below.

• **Suburban drought ends**—Louisville Water Co. is ending its 16-month ban on suburban water main extensions, clearing the way for stalled real estate developments. The action complies with a new rule issued recently by the State Public Service Commission.

• **Biggest shopping center?**—A $23-million project furnishing 1.35 million sq ft of shopping area is claimed to be the nation's largest shopping center by the architect, Victor Gruen. Located about 20 miles from Chicago's Loop, the center will feature a completely covered shopping mall with year-round air-conditioning. Construction has started and project completion is scheduled for mid-summer 1962.

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Installation is fast and simple. New Mueller Mechanical Joints on both sleeve and valve are large enough to fit class "D" pit-cast pipe and small enough to be used with class "150" centrifugally cast pipe.

Only two gaskets are used. A solid rubber gasket is used with all larger classes of pipe, such as class "D". A special rubber gasket, reinforced on both ends with duck to prevent cold flow, is used with all smaller classes of pipe.

These two gaskets, each accurately sized to the class of pipe, make installations faster, simpler and cheaper. Joints are permanently tight, too.

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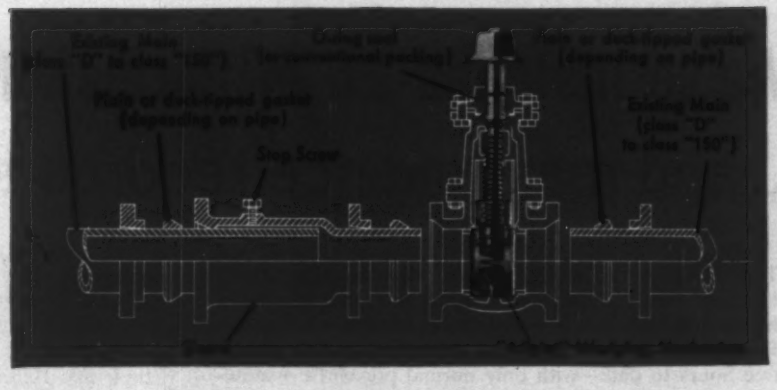

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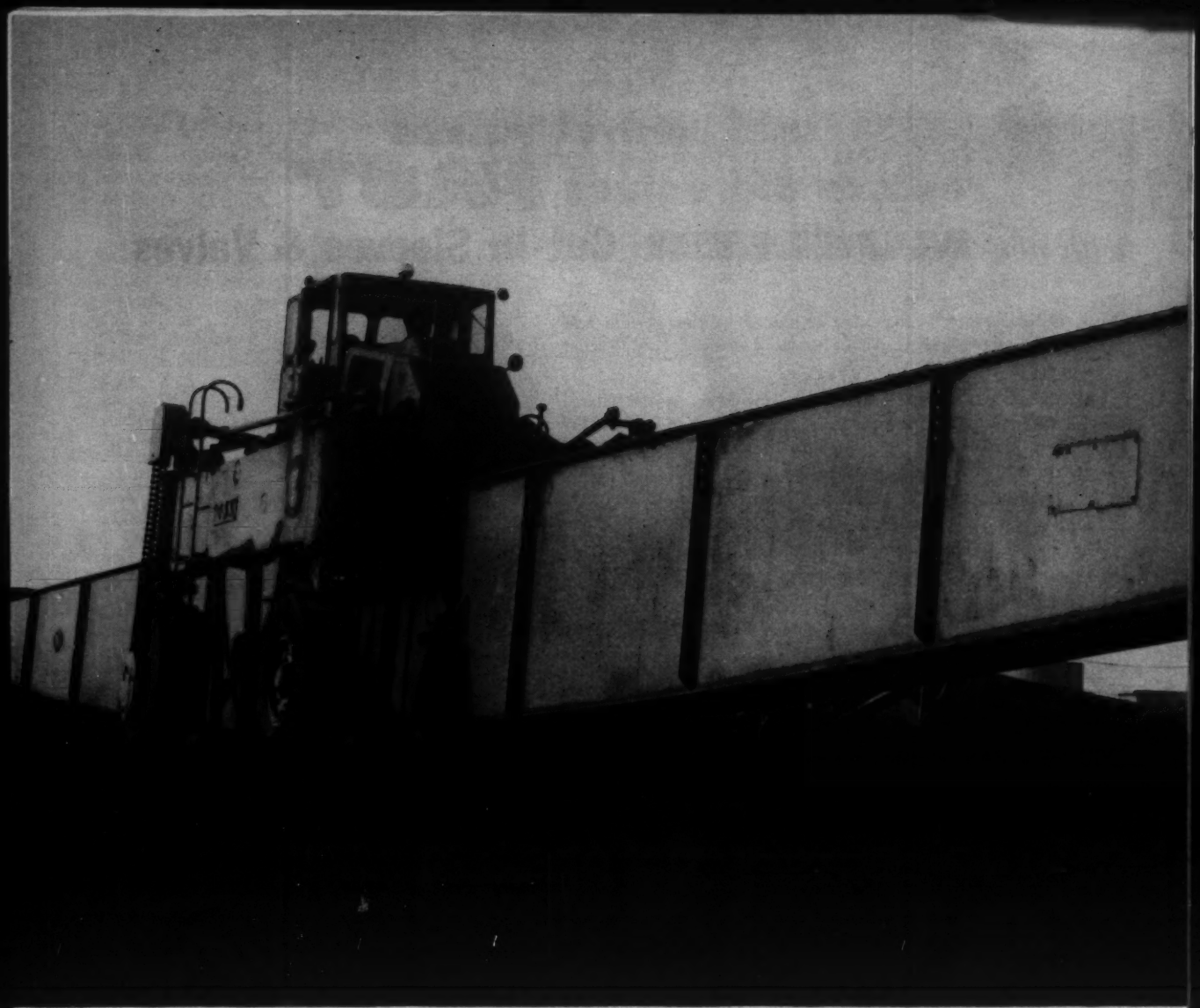

"We've installed 25 of the new lightweight, low-

... and maintenance records to date indicate

The Timken Roller Bearing Company is a long-time user of Hercules diesels. In fact, one Clark-Ross carrier purchased by the firm for a fleet now numbering 20 is powered with a Hercules diesel that has logged more than 17,000 trouble-free hours to date—with only normal preventive maintenance. With this kind of experience, the Timken Company was quick to investigate the new Hercules diesel line when it was released.

Some 25 of the new Hercules engines, ranging from three cylinder sizes to the large, six cylinder, multi-fuel D-426, are installed in materials handling equipment serving the firm's Steel & Tube Division. Many of these engines have compiled service records of over 2000 hours, with negligible service expense. They give plenty of power for the job, too, even though many of them have replaced heavier, larger displacement diesels.

"If present indications are a guide," says Ed Gumpf, "these new Hercules diesels will be the best investment, in terms of engine-cost-per-hour-of-service, that we've ever made."

The new Hercules diesels, available in a range from 50 to 175 horsepower, are proving more economical to buy and less costly to own for many engine users.

For complete details, call the Hercules distributor near you or return the coupon, at right, to Hercules Motors Corp., Canton 2, Ohio.

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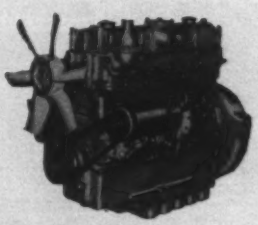
says Ed Gumpf, Supt. of Materials Handling, Steel & Tube Division, The Timken Roller Bearing Co.

Hercules D-426 six cylinder diesel engine delivers 145 HP at 2600 rpm.



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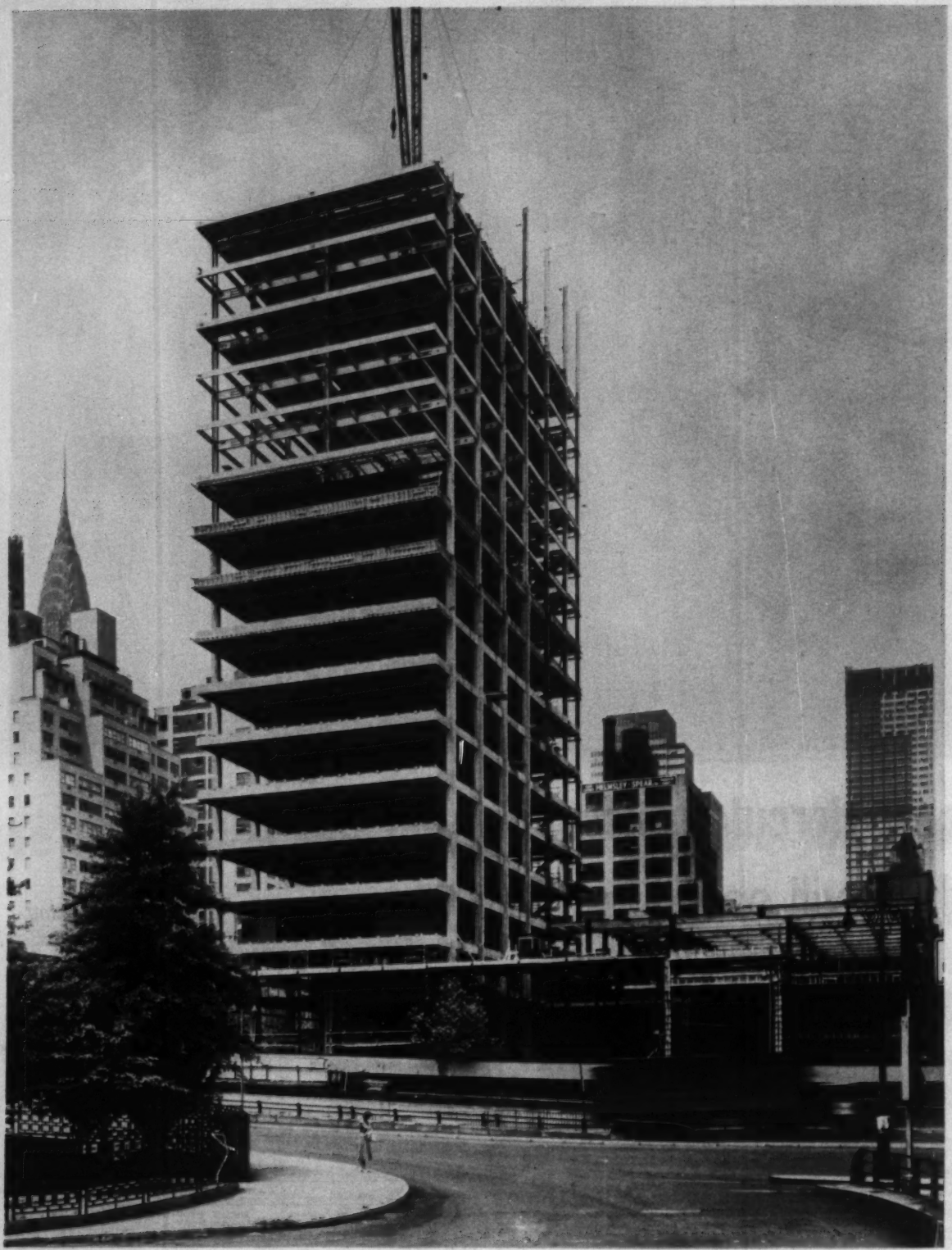
United Engineering Center Gets



Floor beams cantilever 11 ft from slender UEC tower toward United Nations Plaza.

Trim, Welded Frame

By Howard Sanford

Long spans, fixed-end girders and story-height trusses mark the welded steel frame of the United Engineering Center, now under construction in Manhattan.

Located on United Nations Plaza overlooking the East River, the Center will be an impressive headquarters building for five engineering founder societies and ten associated societies representing a total of some 280,000 members.

Basically, the Center comprises a three-story base building with two basement levels and an office tower rising 16 stories above the low roof. In plan, the base building is a thick-legged L. It measures 222 ft x 174 ft along the legs, which, respectively, are 94 and 139 ft wide. The tower section, 66 x 139 ft in plan, rises from one leg of the L.

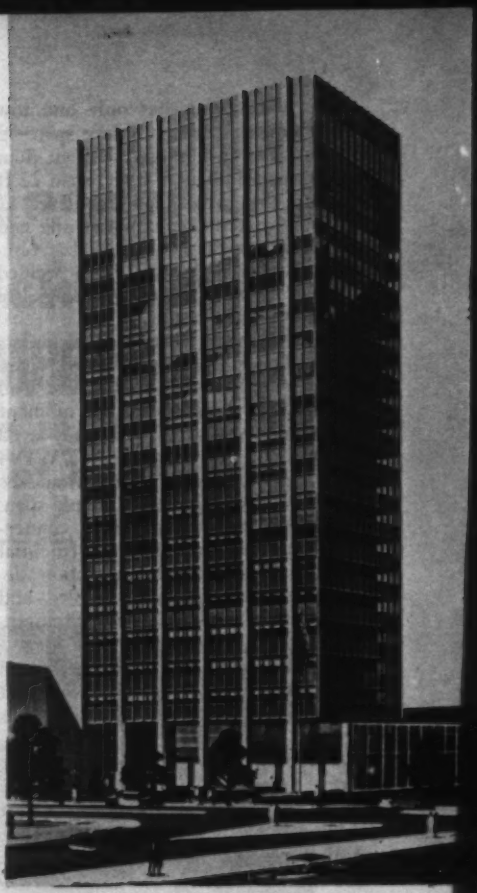
Exterior walls are predominantly curtain wall construction. Glass and blue-tempered spandrel glass, divided into rectilinear patterns by stainless steel mullions and column sheathing, will enclose most of the tower. Two tower corners and a considerable expanse of base building wall will be faced with limestone.

The first floor contains 6,200 sq ft of exhibit space, a large meeting room and the largest engineering library in the world. The meeting room, the second floor reading room directly above and the bookstack area, a clerestory space 40 x 100 ft in plan and 40 ft high, occupy part of the base building, which rises one story above the low roof at the third floor level.

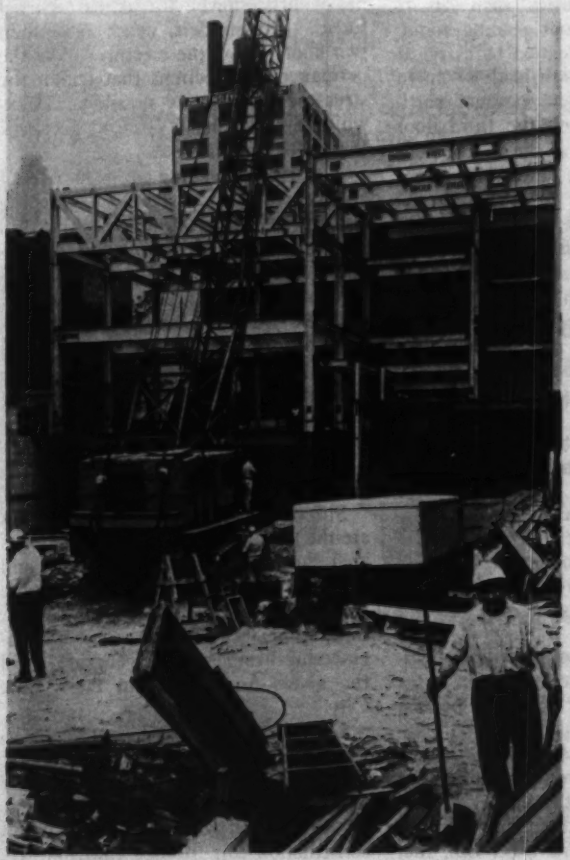
The building will have zone-controlled air conditioning throughout. The steam heating plant will also supply heat energy to the water-chilling units. A refrigerating plant of 880-ton capacity will process 228,000 cfm.

(Turn the page)

Mr. Sanford was engineer in charge of structural design for Seelye, Stevenson, Value & Knecht, Consulting Engineers. He is now an associate with the firm of Wayman C. Wing, Consulting Engineer of New York City.



Glass walls will enclose tower.



Welded truss, girders frame column-free areas.

Tower rises from L-shaped base building.

The office tower has only one row of interior columns. Girders span 32 ft across the two transverse bays; floor beams, spaced about 8 ft c-c, span 22 ft between the girders and cantilever 11 ft beyond exterior columns at one end wall. Lightweight concrete slabs, 4-in.-thick sections reinforced with welded wire fabric, will carry the 100-psf live loads to the floor beams.

The engineers designed the girders for fixed-ends under all loading conditions—combined dead load, live load and wind. By limiting positive moment factors to one-twelfth (1/12), they saved steel and cut story-heights. A 27WF94 girder designed for continuity would be a 30WF124 designed as a simple span.

Welding the beam-column connections cut the cost of the structural framing. The welded connection detail (see drawing) was simpler and cheaper than a riveted or high-strength-bolted one. Moreover, it provided a further saving in the steel section because the material available to resist stress was not reduced by holes for rivets or bolts.

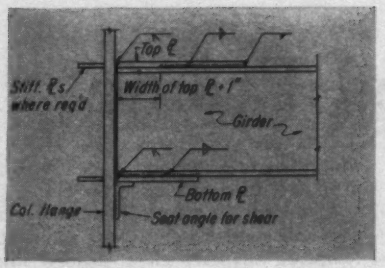
A typical moment connection between the girder and column consists simply of two plates V-scarfed for butt welding to the column flange, one each at the top and bottom girder flanges (see detail). Fillet welds transfer stress from the girder to the plate.

To prevent yielding in the fillet weld at the top flange, the engineers detailed a length of top plate to be left unwelded. This detail permits slight rotational adjustment of the joint before the weld is stressed. Stress concentration in the weld could cause a crack that might creep along the weld and seriously reduce the strength of the connection. Any yielding in the connection will occur in the plate rather than the fillet weld.

The greatest difficulty with the column-girder connections occurred on the lower floors, where the tower column flanges were cover-plated. The relatively thin cover plates could not resist the girder tension force in bending between the side fillet welds. Addition of a thick plate, riveted with a horizontal row of rivets above and below the girder moment plate was the solution to this problem.

Even in the strengthened connections, the welded detail was simpler and more compact than a split-tee or other conventional bolted or riveted detail. Since the architect's design demanded tight control of column and girder space this was an indispensable added advantage of welding.

To conserve ceiling space the designers are piercing the girder webs with mechanical ducts and electrical conduit. Where required, the webs are stiffened with welded plates around the openings.



TYPICAL tower moment connection allows slight rotation before top weld acts.

The 16-in.-deep floor beams are designed as simple spans. End connections are made with ordinary machine bolts. This practice conforms with the job specification: all major field connections are welded; secondary framing connections (i.e. those with end reactions less than 50 kips) are bolted.

Provision for future expansion adds to the problem of providing large column-free interiors in the northwest leg of the L-shaped building. This lower portion of the building was designed for a future eight-story office tower, 50 x 125 ft in plan, and adjacent housing for mechanical equipment. The future tower would extend from the present fourth floor level to the thirteenth floor; the added mechanical housing would be roofed at the ninth floor.

Three welded trusses span 50 ft across the second floor reading room. These trusses are designed to carry, at midspan, future column loads of up to 920 kips. Enclosed in masonry partitions, they fit between the third floor and the present roof at the fourth floor level. Truss depth, measured from chord center lines, is 10 ft 2 in.

Designed as simple spans under vertical loading, the trusses have a wind-moment connection at the third-floor level. A 4-ft length of 18WF50 is shop-riveted to the bottom-chord web, then field-welded to the column like the typical tower girder.

All truss members are 14WF sections, going as high as 14WF314 for the top chord center panel of the heaviest truss. Bottom chords are reinforced with 15-in. channels across a panel where a doorway eliminates the vertical web member. Webs of the chord sections are horizontal.

Welding these heavy trusses resulted in substantial savings in material and fabrication costs by:

- Reducing the size of tension members, since no deductions from gross area are required by holes for bolting or riveting.
- Eliminating gusset plates.
- Eliminating layout, drilling or punching of holes in the shop.

To eliminate field splicing of the trusses, Drier Structural Steel Co., Inc. of Long Island City, N. Y., made all the butt-welded joint connections in the shop. The fabricator shipped the 22-ton trusses to the site in low-bed trucks. An 85-ton crawler crane swung them into position.

Four roof girders in the adjacent bay span 42 ft across the clerestory book area where five levels of prefabricated stacks will be supported at the first floor level. These girders are also designed to carry future column loads (up to 363 kips) near midspan. A 40-in.-deep by ⅜-in.-thick web plate and 20-in.-wide flange plates, varying from 2 to 3 in. thick, make up each girder. They were designed, like the trusses, as simple spans.

Drier erected the building in two stages: first the base building; then the tower. After the crawler crane had finished the first stage work, it lifted a guy derrick to the first level of the tower. The derrick's 90-ft boom, operating from a 100-ft mast, can reach over the sides of the 139-ft tower length. It can lift 20 tons.

Erecting the slender tower posed the biggest challenge in the field. Bracing the derrick with guys anchored to the narrow base afforded by the 66-ft tower width was one problem. A greater one was maintaining tower stability.

The erectors are taking several precautions to limit racking of the framework. The derrick operator handles heavy lifts slowly to reduce inertial forces. Five welders, never more than two floors below the erectors, make the permanent connections that stiffen the structure as soon as possible. Meanwhile, field engineers continually check the tower's plumbness.

The tower is going up at a rate of about two floors per week. "Topping out" is scheduled for late July, and the building should be ready for occupancy by mid-summer 1961.

Typical column foundations are plain concrete spread footings bearing on Manhattan schist. They are designed for 20 tons psf. Some footings had to be redesigned for eight-ton bearing value when the general contractor, Turner Construction Co. of New York City, discovered the bearing strata was decomposed rock in some areas.

Shreve, Lamb & Harmon Associates are the architects; Jaros, Baum & Bolles are the mechanical engineers; and Seelye, Stevenson, Value & Knecht are the structural engineers. Samuel C. Bast, associate with the structural engineering firm, is project engineer. All the above firms are from New York City.

United Engineering Trustees, Inc., will own and operate the building for the many engineering organizations housed there. The trustees are financing the major part of the $12-million construction cost through contributions from industry and engineers.

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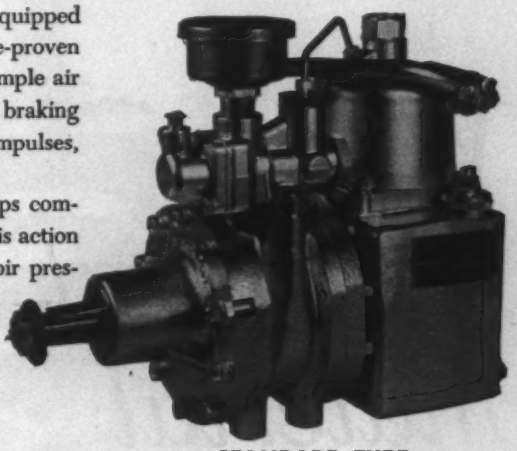

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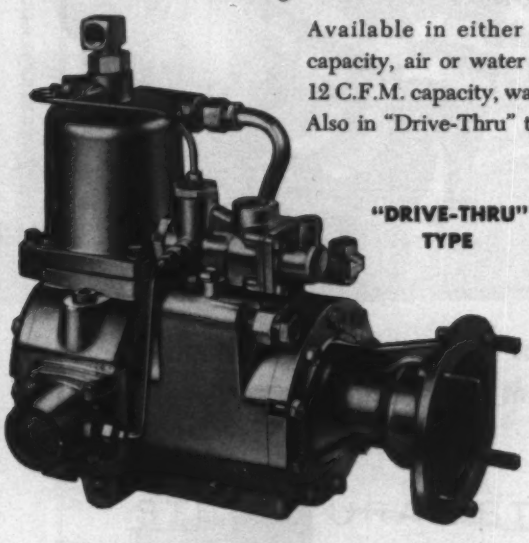

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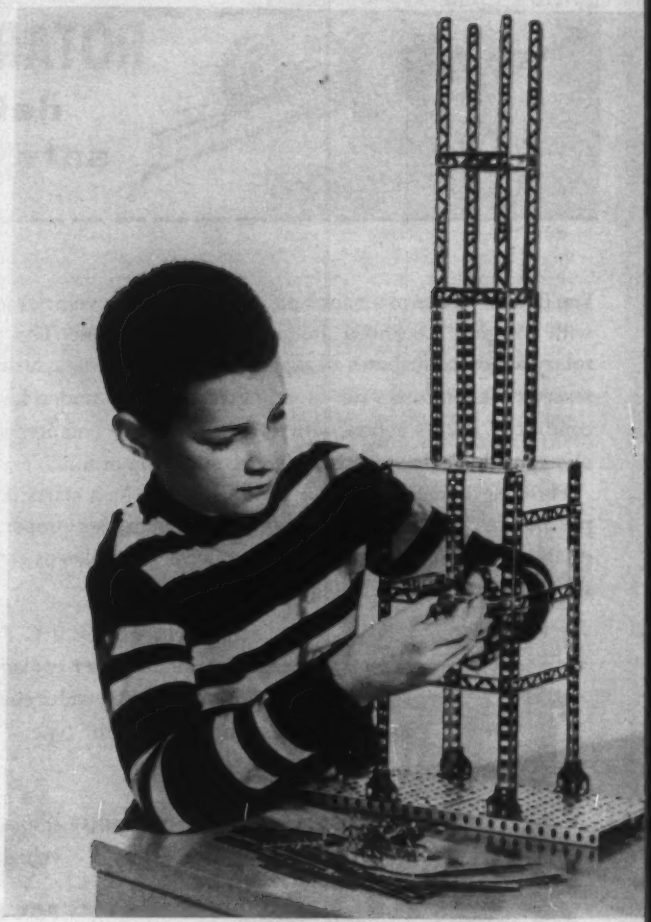

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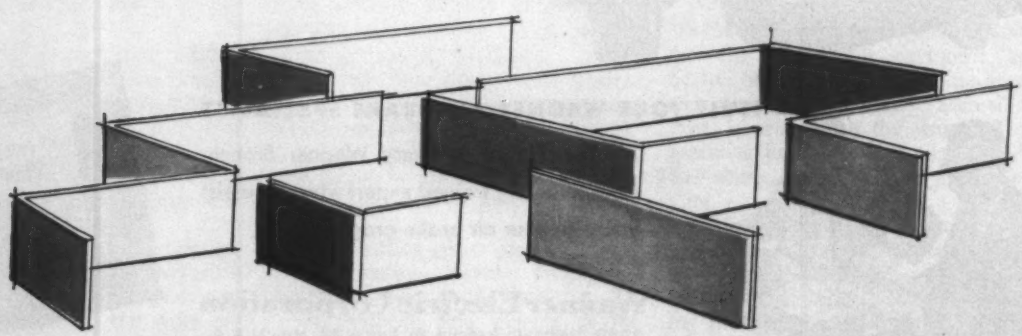

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Pavement is being replaced on the Berkshire section of the New York Thruway because of . . .

Poor Drainage Blamed for Failure

Under protest, a contractor is rebuilding a badly deteriorated 7.4-mile section of the New York State Thruway that the firm constructed originally less than two years ago.

Responsibility for the condition of the road is being bounced around among the contractor, Union Building & Construction Co., of Passaic, N. J.; the engineer, Clarke & Rapuano, New York City; and the New York State Thruway Authority.

It may take litigation to determine who, if anyone, is at fault, but on one point, all concerned are in accord: The failure—excessive pavement cracking and pumping—is the result of insufficient drainage.

Weather has aggravated the problem. There was little snow in the winter of 1958-59, but frost penetrated more than 4 ft. Last winter there was little frost penetration, but deep snows caused unprecedented ground saturation during the early spring.

The rebuilding is on the easternmost segment of the Thruway's Berkshire section, a 23-mile link between the Massachusetts Turnpike and the mainline of the New York Thruway. Repairs now under way will cost an estimated $650,000. Against this, the authority is still holding $350,000 in retainage due the contractor on the initial $7.1-million construction contract.

In the damaged section, opposing roadways are separated by a wide mall. Each roadway is a 9-in.-thick reinforced concrete pavement with a 12-ft-wide driving lane and a 13-ft-wide passing lane. Transverse joints are at 100-ft intervals. The foundation (or base) course is of select granular material. Ditches at the outside shoulders are 4 ft deep; at the inside, 3 ft.

For the most part, the east-west highway runs through a valley with high hills on both sides. Near Route 22, at the western end of the damaged section, the road is at El. 650. Adjacent hills immediately to the south reach El. 1,500; to the north, 1,133. To the east, at the connection with the Massachusetts Pike, the Thruway is at El. 950 and adjacent ground rises to El. 1,800.

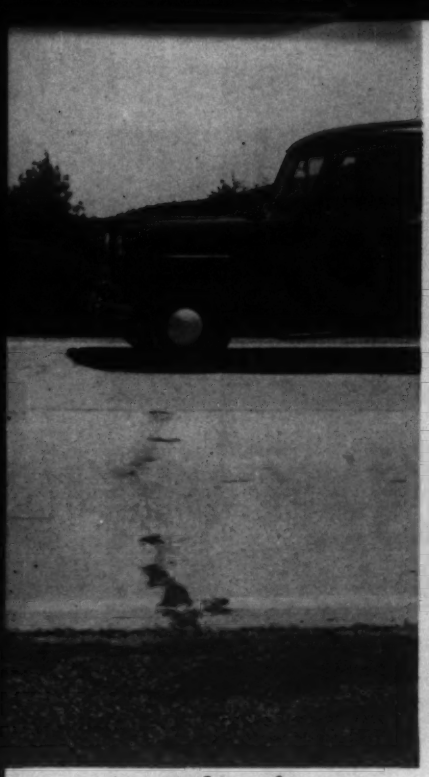
The area is of glacial till underlain by alternate horizontal lenses of clayey silt and fine sand with traces of silt. Borings taken by the state prior to construction indicate that this varied material reaches depths of up to 40 ft.

Removal of unsuitable material from the roadbed during its initial construction in 1957-58 was determined by the engineer after inspection. And sometimes the going was rough. In the area where there is now the greatest deterioration, at a point about three miles from the Massachusetts line, the contractor tried three times to make the required cuts before he was successful. He began this operation in the fall of 1957, but gave up when the material was so wet he could not move his scrapers even with twin pushers. He tried again in the spring of 1958 with the same results—or lack of them. In the summer of 1958 the area dried up enough to permit use of the machines.

The contractor contends that because the rock at this point is 0 to 10 ft below the base course, he recommended undercutting the area. He also suggested the installation of under-drains, an item not included in the original contract. The authority rejected the undercutting but asked that an 18-in. pipe be installed in a ditch 3 ft below pavement level. This was done.

During the initial rebuilding of this area, the pavement was removed and the roadbed was undercut to a depth of 4 ft below profile grade. The cut was then backfilled to the proper elevation with granular material. Movement of construction equipment caused silt to work its way up through the foundation course. Within 10 days it began to spread out on the surface (see photo above). The fill was then ordered removed for a second time and the undercut was carried to a depth of 10 ft below the roadbed. The 18-in. pipe drain was also lowered.

The deterioration of the pavement on the Berkshire section of the Thruway was noticed soon after the road was opened on October 8, 1958; the Thruway Authority refused to accept the job. During the summer of 1959, Union Building did an appreciable



extensive cracking due to . . .

water boiling upward, and . . .

silt working through base course.

# of Two-Year-Old Road Pavement

amount of repair work (none involving undercutting) on its section of the road at the direction of Thruway engineers. These sections have since failed for a second time. On December 2, 1959, the Thruway Authority issued a general news release announcing its rejection of the work and charging that the contractor had not met the specifications. Specifically, the authority said that the contractor had failed to: Install 4-ft-wide weeps every 100 ft; properly compact the foundation course; keep drainage ditches clean.

The contractor contends that weeps were to be installed at the direction of the resident engineer; that they were installed where asked for; and that only those weeps installed were included on requisitions for payment. He also claims that the compaction of the foundation course was done under the direct supervision of the consultant's representatives. He admits that ditches were not kept clean during the spring of 1959, but claims that they were filled by material from sloughing side slopes.

Virtually all damage to the pavement has occurred in cut areas or in the vicinity of culverts. On the east-bound roadway, now under reconstruction, some 10,000 sq yd of concrete pavement is being removed and replaced. Undercutting will account for 6,000 to 12,000 cu yd of excavation and backfilling. On the west-bound roadway, damage is appreciably less, so the quantities, although yet undetermined, will be less. The total quantity of pavement removed, however, will probably exceed 14,000 sq yd.

Not all damaged pavement is being removed. In areas of slight damage, nothing is being done. In other areas —covering some 10,000 linear ft of pavement—the authority has ordered the contractor to fill voids between the pavement and the foundation course with an asphalt emulsion. In these areas, the contractor bores 1-in.-dia holes at 6- to 10-ft intervals along the longitudinal joint between the traffic lanes. Into each of these holes the contractor then pours from 2 to 3 quarts up to 25 gal of emulsion. If 25 gal does not fill the voids (or if a lesser quantity does fill them during the pouring but later evaporates), the contractor repeats the application. In some places, holes have been filled three times.

In other places the filling of the holes has been delayed by water, which flows from beneath as though coming from an artesian well (see photo).

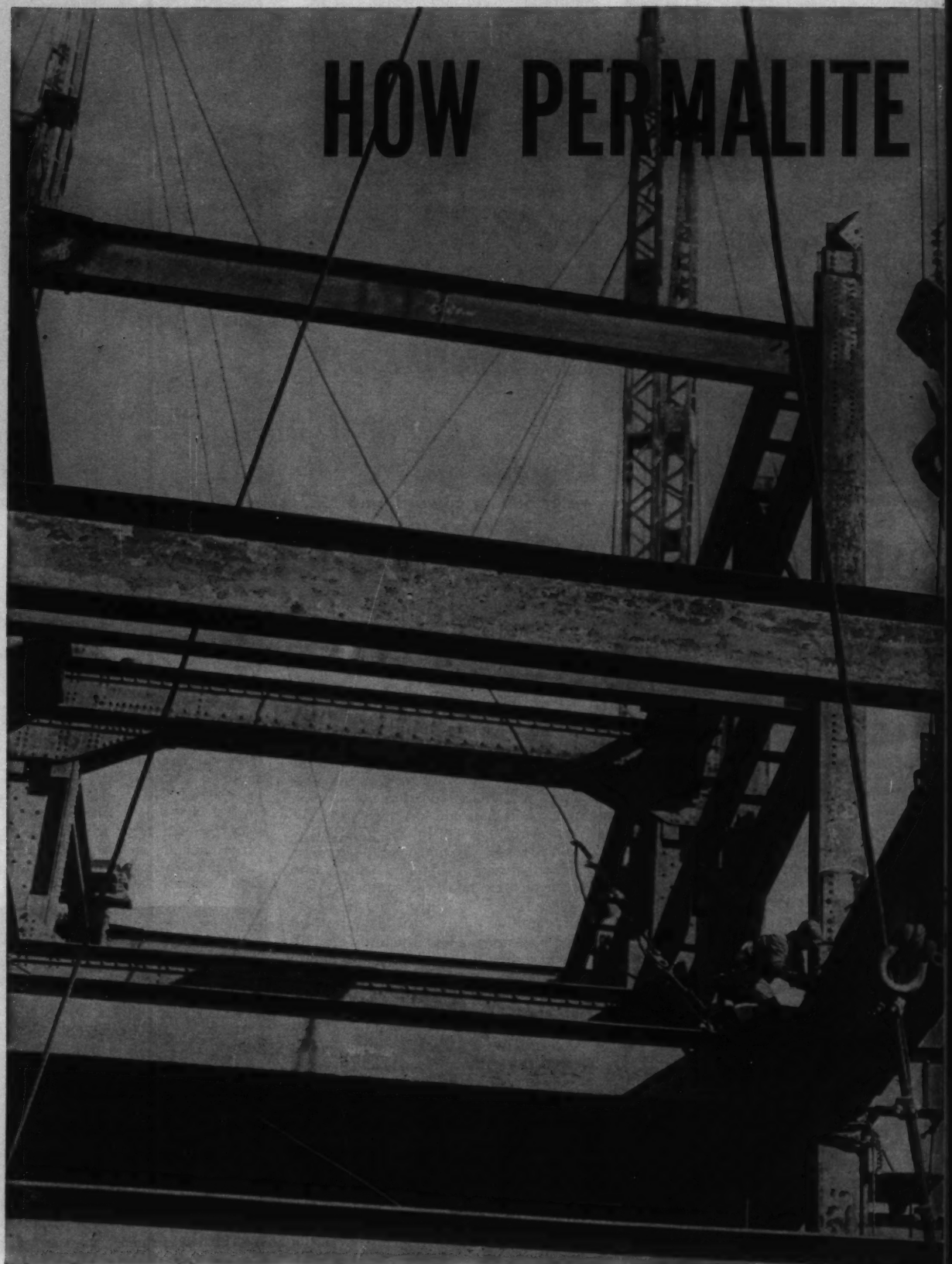
Running water is a problem not only in places where the pavement is left in place, but also in some areas where concrete is being removed. Small springs have bubbled up through the foundation course at several points.

Where pavement is to be removed, the contractor delineates the area with a double saw-cut transversely and a single cut longitudinally. With a headache ball in some cases, but usually with hydraulic hammers, he breaks up the concrete within the cuts. He uses jackhammers to remove areas adjacent to good pavement, which is to remain in place. Bulldozers pile the spoil, power shovels load it on trucks for disposal along the right-of-way.

On the east-bound roadway, the authority is requiring that the pavement be replaced with a dual drum paver. On the west-bound lanes, where there is less concrete to be re-installed, truck-mixed concrete will be permitted.

All the remedial work is set for completion by early fall.

WATER comes through the hole bored to receive asphalt emulsion.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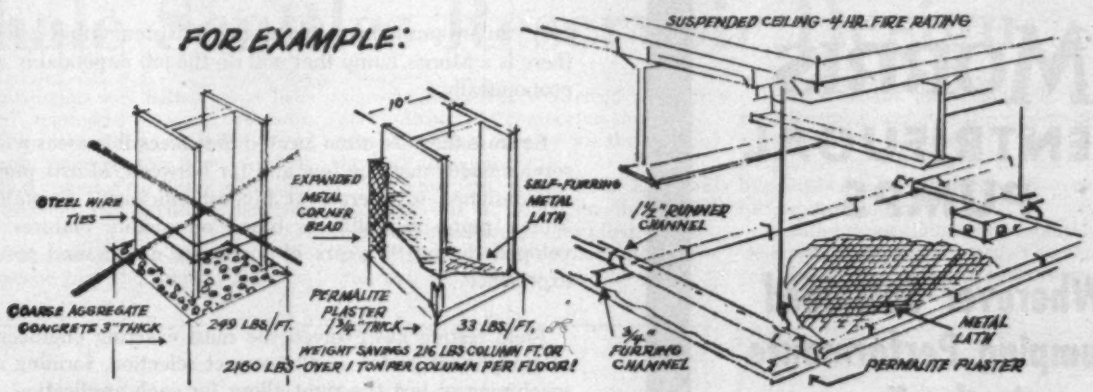
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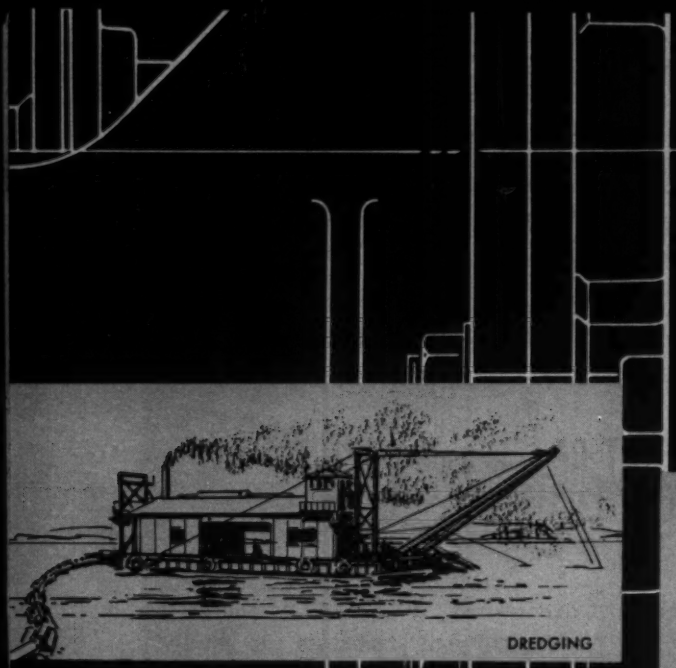

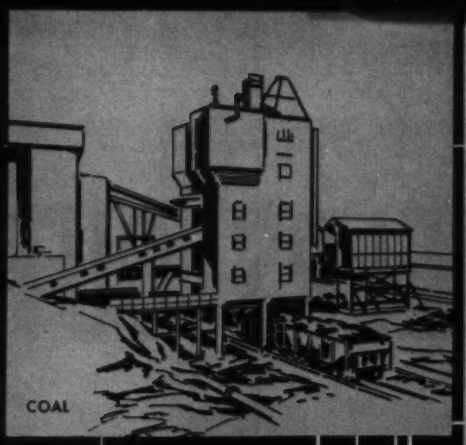

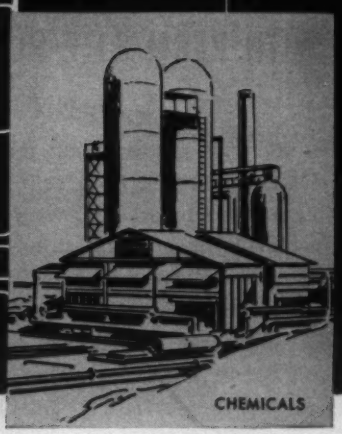

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Arched reservoir floor replaces flat slab because of shale that swells.

Shale Scuttles Reservoir Design

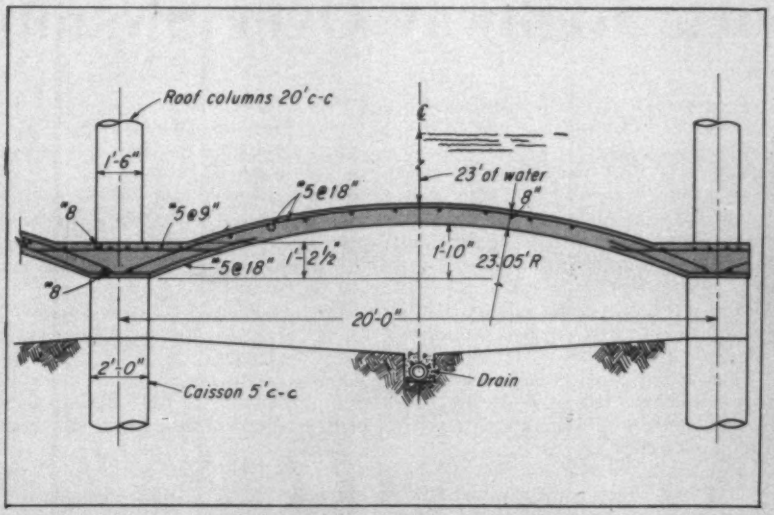
Construction was halted on a half-finished reinforced concrete reservoir near Denver so that engineers could drastically redesign the floor. A shale formation, exposed to heavy rains during excavation, had swelled as much as 4 in.

The expanding shale, common in the area, meant that the original floor design—an 8-in.-thick reinforced concrete slab placed on compacted material—would be unsatisfactory for the 30-million-gal containment.

The redesign selected to lick the problem was a system of thin shell concrete barrel arches on drilled, cast-in-place caissons that boosted the reservoir cost by $500,000.

Excavation for the 550x385-ft Hillcrest Reservoir was almost complete and a considerable portion of a large box conduit along two sides of the reservoir was finished when engineers discovered the subsoil problem.

A number of foundation solutions were considered and rejected. The Denver Board of Water Commissioners



Continuous 8-in. barrel arches carry 23 ft of water.

Drilled caissons are 20 x 5 ft c-c.

then retained Ketchum, Konkel & Hastings to make a report of the foundation conditions and a proposed redesign of the reservoir floor.

Because of the soil condition, the new design had to be completely independent of the effects of the swelling soil.

Four floor systems were considered. Two were flat slabs on caissons spaced 20 ft c-c and 10 ft c-c each way. The other two systems were continuous barrel shells with 20-ft chords and supported on caissons spaced 20 ft c-c and 5 ft c-c, longitudinally.

Drilled, cast-in-place concrete caissons were to be used in all cases, and the shells were to be built clear of the ground.

Since the depth necessary for the drilled caissons was comparatively shallow, the 20-ft-chord barrel shells on caissons at 5 ft c-c was deemed the most economical and was adopted by the water board.

Fortunately, the new design utilized nearly all the originally designed reinforcing steel which had been delivered to the job. But the redesign hiked concrete requirements by 4,600 cu yd; an extra 150 tons of reinforcing steel was needed; and an added 16,000 cu yd had to excavated.

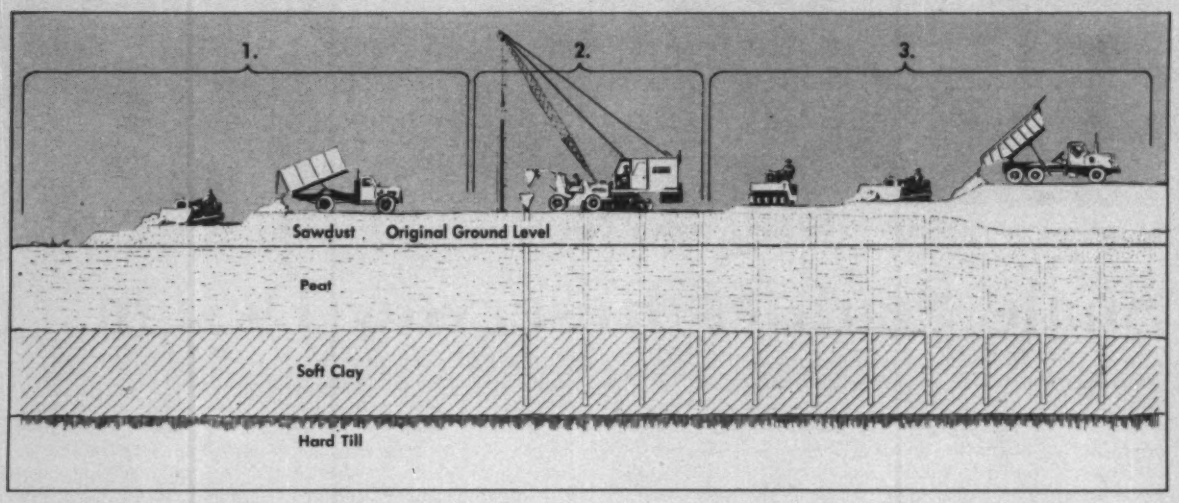
In the final design, the flat, continuous barrel shells have a rise of only 1 ft 10 in. in 10 ft. Consequently some of the drilled caissons had to be battered to take the thrust of the flat arches. The shells clear the ground a minimum of 18 in.

The reinforced concrete roof of the reservoir is a flat slab carried on concrete columns spaced 20 ft c-c each way.

The flat slab foundation supporting the outer and center walls of the basins were also a part of the redesign of the reservoir floor. They were cast on 4 in. of cellular paper material to allow for the possible swelling of the underlying material.

The reservoir will be completed this year at a cost of over $1 million. It represents a unique structural system for the floor of such a large reservoir. Moreover, it is an ingenious solution of the very difficult problem of supporting 24 ft of water on a most unstable soil.

R. B. McRae is chief engineer of the Denver Board of Water Commissioners. Woodward, Clyde & Associates, served as soil specialists. Thomas Bate & Sons, Denver, is the contractor.



INITIAL STEPS in building road over peat are (1) spread and compact thick layer of sawdust; (2) install sand drains; (3) build up sand fill to surcharge height. Sawdust is forced below the water table and remains in place.

Sawdust Supports Highway Over Swamp

Canadian engineers are using a thick layer of sawdust in an interesting variation of the sand drain method to build a portion of the Trans-Canada Highway between Vancouver and New Westminister, B. C. In this area, the Burnham Throughway—designed to full freeway standards—crosses deposits of peat and very soft clay up to 80 ft in depth.

First step in the method is to place the layer of sawdust over the peat, which is too soft to support construction vehicles. Thickness of the sawdust layer is such that, after a sand surcharge has been placed on top of it and settlement has taken place, the sawdust will be permanently submerged below the water table.

The contractor, John Laing & Son (Canada), Ltd., uses a bulldozer to spread and compact the sawdust. Advantages of the sawdust are its light weight and relatively high strength. Even below the water table, it is not expected to deteriorate with the passage of time.

Next step is to install the sand drains. The contractor forms each drain by driving a mandrel to the required depth, filling it with sand, and then withdrawing the mandrel.

The drains provide ready escape of water from the soil layers as they consolidate under load. This greatly accelerates settlement.

Equipment is used to place a compacted sand fill over the sawdust layer. Typically, the contractor places about 8 ft of fill over a period of time. About 3 ft of the sand remains in place as a base for the roadway and 5 ft is surcharge. Engineers control the rate of application of the sand fill by observations made on settlement plates and piezometers installed above and below the sawdust and in the underlying soft soil layers.

From six months to a year is required for full settlement to take place under the surcharge. After stability is achieved, scrapers remove the top portion of the sand fill, and a flexible pavement is then constructed in the usual manner.

The method was devised by the Foundation of Canada Engineering Corp., Ltd.

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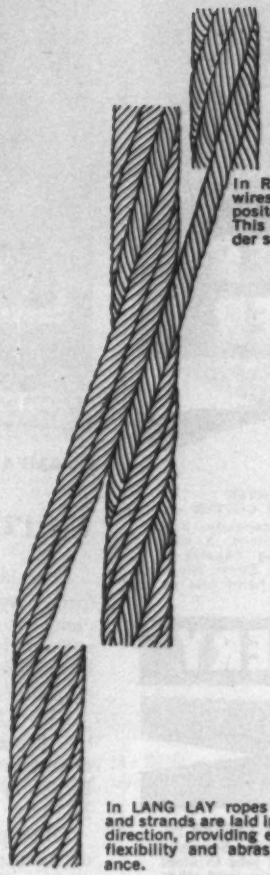

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International

HUAMPANI HYDRO STATION adds 30,000 kw to Lima-Callao power complex.

Peru Boosts Hydro Power Output

Peru added another link to its Lima-Callao hydroelectric complex when it inaugurated the 30,000-kw "Gino Bianchini-Huampani" power plant. This brings the area's installed hydro-power capacity to 160,000 kw.

The $7-million plant is located in the Rimac River valley opposite the mountain resort town of Chaclacayo. Elevation above sea level is about 2,115 ft.

Other plants in the complex, planned over a quarter century ago, are at Moyopampa, 63,000 kw and at Callahuanca in the Santa Eulalia valley, 67,000 kw. A standby thermal plant has a capacity of 52,000 kw which will be increased to 72,000 kw with the addition of two 10,000-kw gas turbine units.

A fourth hydro plant, now under construction, will have an installed capacity of 240,000 kw. First 60,000-kw unit of this plant, named Grant Central de Huinco, is scheduled to enter service in 1963. Cost of this new project is $50 million of which $20 million is expected to come from a World Bank loan.

Flow of water serving this complex of power plants is to be increased by a six mile-long diversion tunnel, now being driven through the main range of the Andes. This tunnel will divert water now draining eastward into the Amazon basin from the high mountain lakes of the central Andes to the Pacific watershed by way of the Santa Eulalia River.

This diversion will also provide the Lima-Callao area with an ample supply of potable water and permit reclamation of 10,750 acres of desert land on the pampas south of Lima.

A Swiss industrial engineer, Pablo Boner, is the original designer of the Peruvian hydroelectric power complex. As project engineer for the interested companies, Energia Hidroelectrica Andina, SA, and its associated company, Empresas Electricas Asociades, he has supervised construction of the various plants, tunnels, canals and related work.

Sinai Peninsula May Get Nile River Water

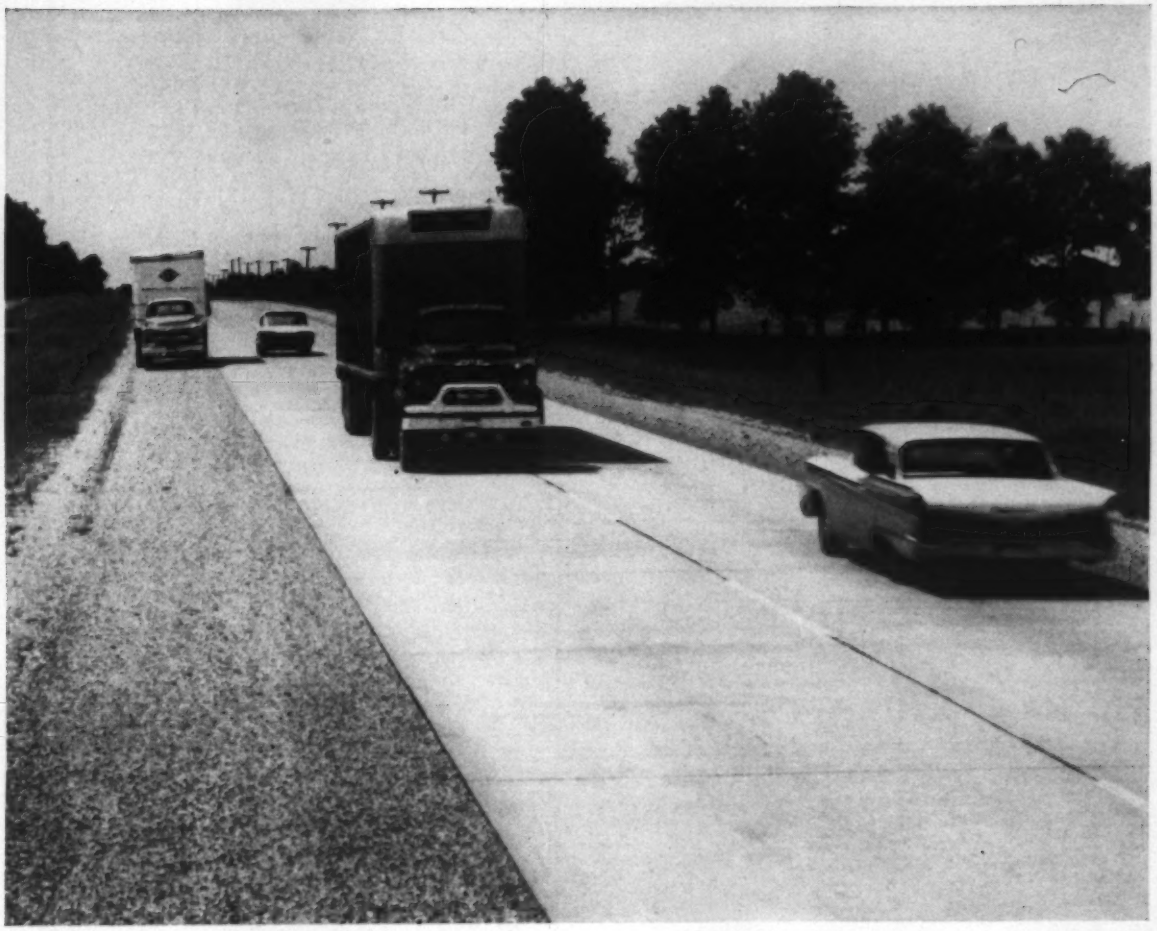
Nile River water could be used to irrigate and provide drinking water for towns on the northern Sinai Peninsula if an old project is actually revived as reported.

The project called for siphoning water from the Ismailia "sweet water" canal, which branches off the Nile near Cairo, and piping it under the Suez Canal to towns of the Sinai Peninsula.

Egyptian authorities believe that this plan, plus an extensive system of artesian wells and proper storage of rain water, could make the towns along the Suez arable and help resettle two-million farmers from the over-populated Nile Valley.

At one time the project interested the United Nations Relief and Works Agency for Palestine Refugees. The project could be an answer to the problem of resettling the million Arab Palestinian refugees.

(*International continued p. 49*)



Soil-cement was used to stabilize shoulders on a 14.3-mile section of U.S. 49 north of Jackson, Miss. The 10-ft. shoulders on each side of the 24-ft. concrete pavement were treated to a depth of 6" with 4.5 per cent cement by volume.

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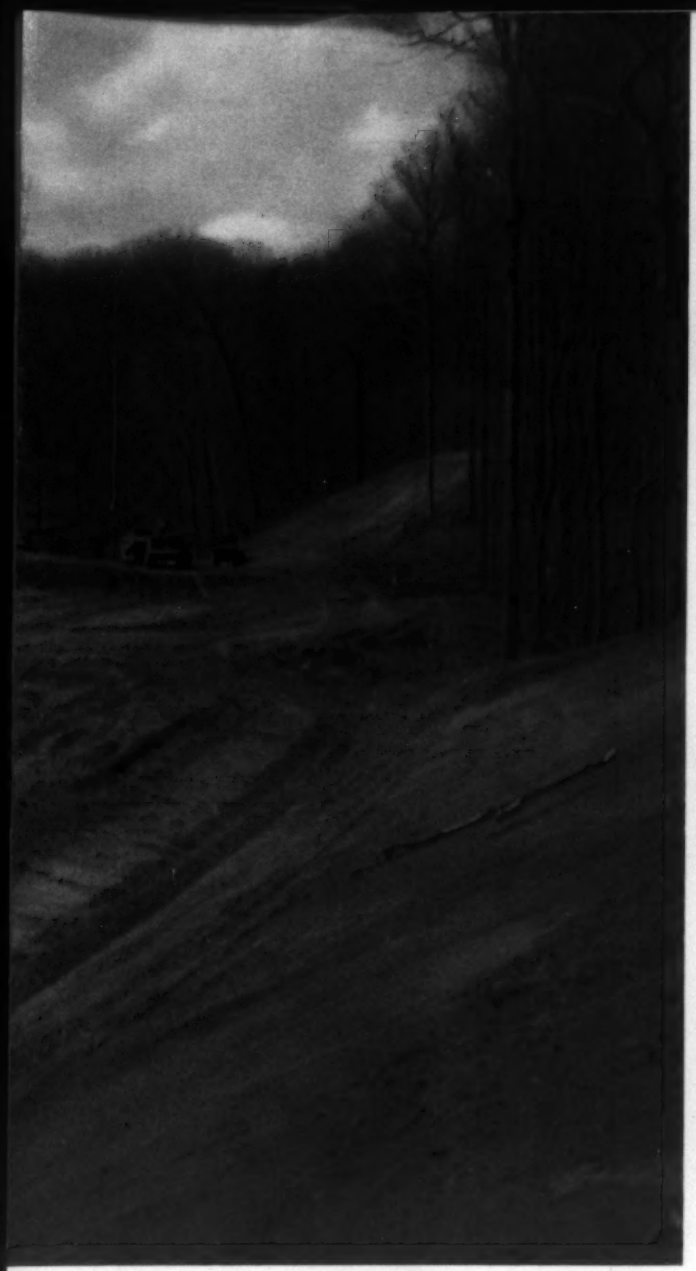
"We're primarily flatland people," says Everett Poindexter, Engineer and General Superintendent for Barnhill. "On this job we've got the hills and we've also got to preserve as much of the natural beauty as possible. This includes saving thousands of dogwood trees."

Even though such a garden-type project tends to slow dirt moving, Barnhill is well ahead of schedule. To achieve this, Barnhill keeps its equipment in prime condition and avoids mechanical delays with the help of Gulf products and service.

To insure peak performance, Barnhill uses Gulf® Super-Duty Motor Oil, Gulf® diesel fuel, Gulf® Multi-Purpose Gear Lubricant, and Gulflex® multi-purpose grease. When Barnhill moves to a new area, Gulf fuels and lubricants are delivered to the job site even before



Barnhill Contracting Company lubricates pushers at lunch time and rubber-tired equipment at the end of the day.

Melvin J. Cottrell (left), Project Superintendent for Barnhill, with Allen Ford, Gulf Sales Engineer. Capable engineering counsel is an essential part of Gulf service to every industry.

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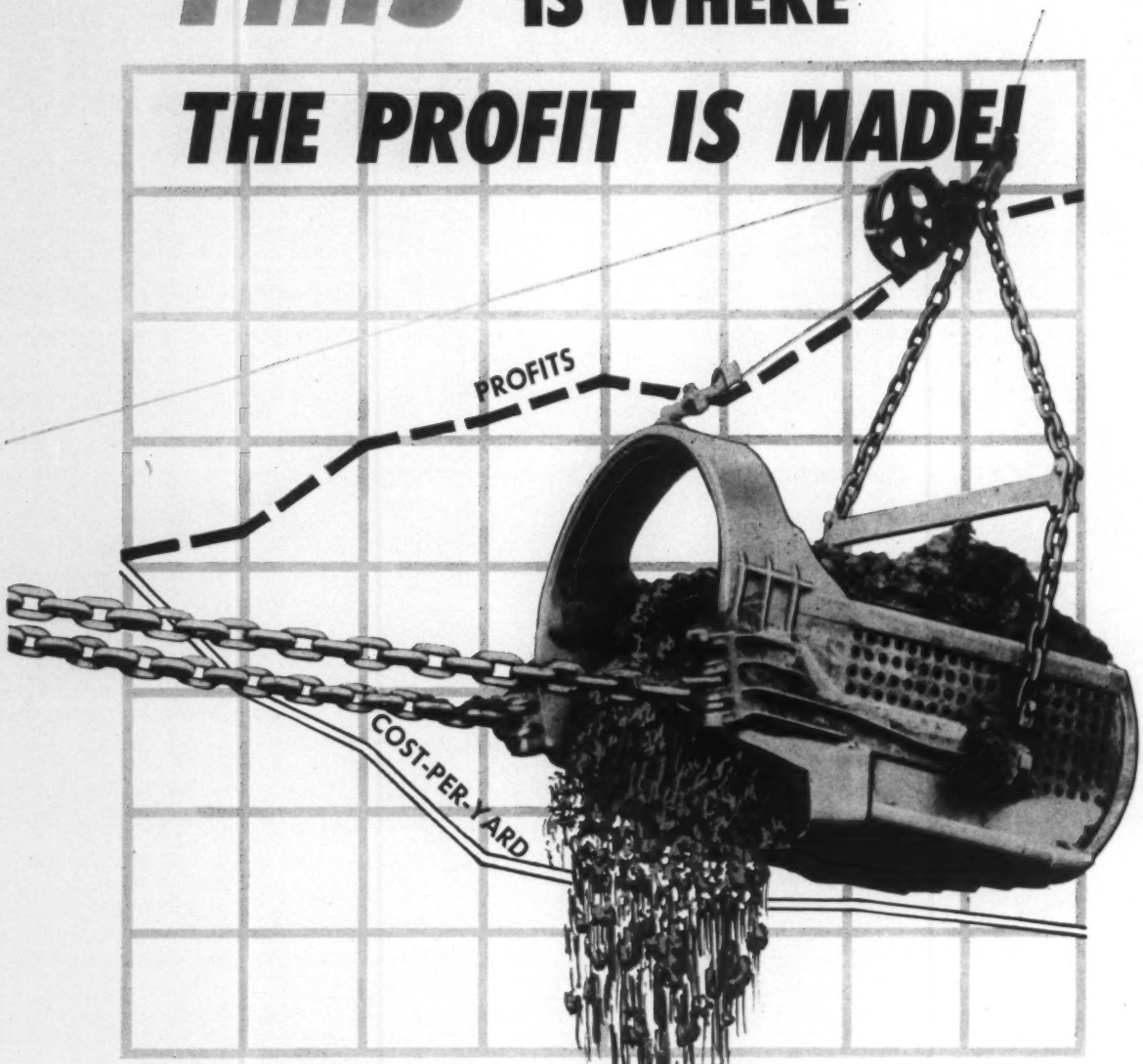

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Iraq Revives Plans To Tap Water Resources

Iraq's Economic Planning Board, successor to the Development Board after the 1958 revolution, has revived the modernization of the Diyala River irrigation scheme. The work will cost $47.6 million.

Contract for the engineering has been awarded to the British firm of Sir Murdoch MacDonald & Partners, associated with the project before the revolution. Resumption of the project may be an indication that Iraq's new economic planners are reconsidering hasty post-revolution shelving of long-term projects in favor of immediate industrialization.

The Diyala irrigation scheme, including considerable embankment work, will use water stored behind the Derbendi Khan Dam. Planning board sources said that the decision to speed up the project was to catch up with the scheduled completion of the rockfill dam early in the 1960's.

Derbendi Khan has met with many delays and major mishaps and as a consequence its cost has gone up. The original contract was for $32.2 million. Before the revolution, the cost was re-estimated at $51.6 million. Now with the need for additional excavation and grouting the estimate is $69 million.

A Yugoslav firm of consulting engineers (Yugoinvest) took over supervision of the dam after Iraq's contract with the Harza Engineering Co., Chicago, was terminated last year.

Central America Plans Hydropower Plants

Construction of a $12-million hydroelectric plant on Honduras' Linde River will get under way, as soon as the International Bank for Reconstruction and Development grants a requested loan.

Eventually, Honduras plans to interchange electric power with El Salvador since peak consumption hours of the two countries differ. El Salvador would supply power to Honduras from its Cince de Noviembre Dam on the Lempa River. Installation of a fourth and fifth turbine and generator at the Lempe River dam will increase output to 75,000 kw. Thompson-Cornwall, Inc., is handling construction.

A new hydroelectric plant is also being planned by El Salvador. It will be in the Lake Guija area near the Guatemalan border and have an initial output of 15,000 to 20,000 kw. El Salvador has offered to supply power to Guatemalan consumers at the same rate it charges its own users.

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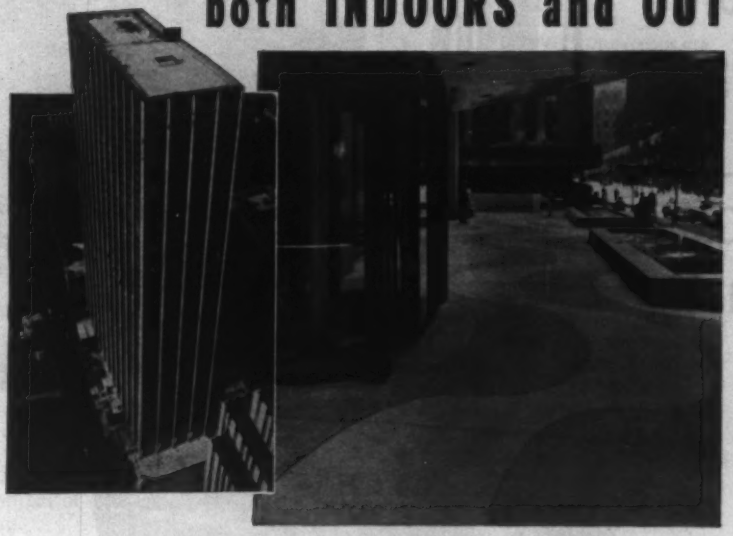

Soaring 48 stories above New York's Avenue of the Americas, the massive central tower of the new Time & Life Building adds new splendor to the imposing skyline of Rockefeller Center.

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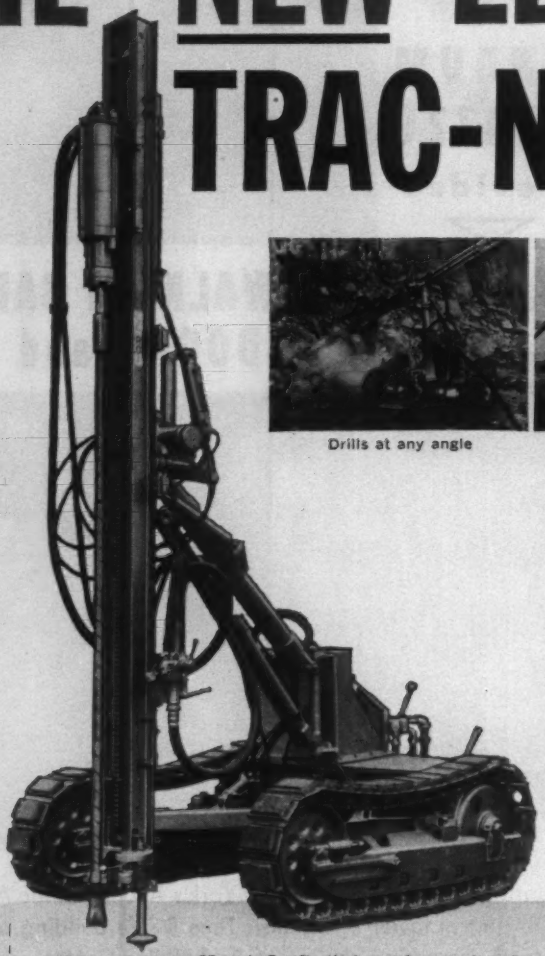

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The 900 has 18 in. of ground clearance. Tread shoes are cast steel, double wall construction in 38- and 44-in. widths. Self-cleaning tumblers are of ten-sided design.

The machinery deck features tapered deep girder construction extending straight through from the boom foot to the counterweight support. It is nearly 4 ft thick at the center and is jig bored, drilled and machined to ensure perfect alignment of shafts, gears, bearings and drums.

All constantly turning shafts and drums rotate on anti-friction bearings; where required, gears, shafts and jaw clutches are sealed and run in an oil bath. Independent swing is available with either air-controlled friction clutches or hydrostatic drive. The boom hoist features a sprag type overrunning lowering clutch. American Hoist & Derrick Co., St. Paul 7, Minn.

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Caster wheels are adjustable either up or down, in or out, to fit specific job conditions. When laying base against existing slabs, one wheel can be adjusted to run on the pavement with the other on the base. With sufficient trucks available, capacity of the Model 18 is about 600 cu yd per hour. Ulrich Manufacturing Co., Roanoke, Ill.

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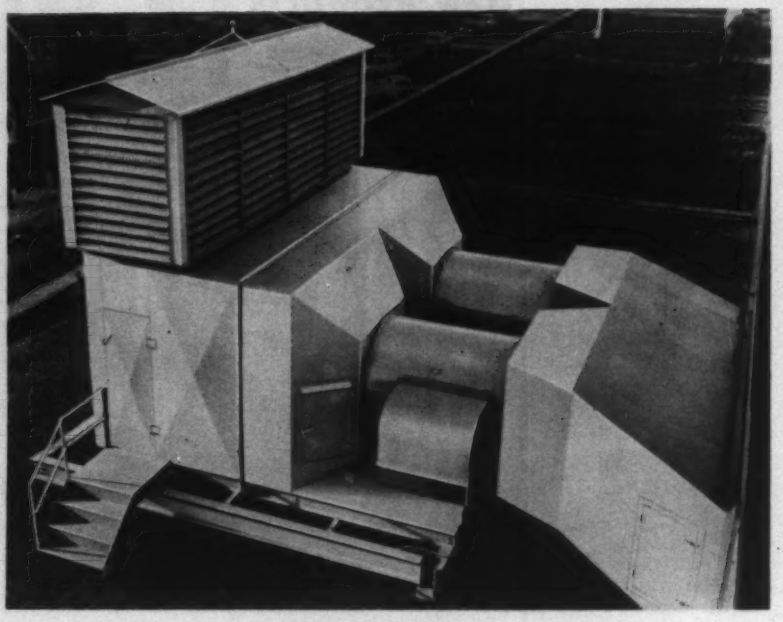

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Designed for industrial plants, this package-unit heater features a 15-million Btu gas burner with stainless steel baffle wings that protect the flame and disperse heat into the air stream. The unit is controlled by push-button from the factory floor. It adjusts automatically to temperature change.

Air intake is through a louver-tower, open on four sides. Two 40-hp axial fans pull heated air through the combustion chamber into a plenum and distribution chamber. They then force the air through more than 100 adjustable registers at the rate of 150,000 cfm. METALS ENGINEERING AND MANUFACTURING CO., INC., 8820 LYNDON, DETROIT 38, MICH.

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Rotary motion is the principle of actuation, and driving-wheel rotation is imparted by the material transporter itself. In the case of conveyor installations, driving-wheel rotation is set off by the top carrying belt, and in other applications it is imparted by moving trucks, cables, rotary equipment and shafts.

Upon rotation of the driving pulley, actuated by the material transporter itself, a gear pump delivers hydraulic fluid at low pressure from a reservoir to the rear of the piston. The piston then moves forward carrying with it the push-rod, thus lifting the control valve from its seat, and thereby permitting water or liquid to pass through the unit to the spray pipeline. Stoppage of rotary motion causes the control valve to close. MEGATOR CORP., 930 MANCHESTER AVE., PITTSBURGH 12, PA.

Sliding-Gate Regulators Are Stainless Steel

A line of sliding-gate pressure regulators is now available in stainless steel for corrosive service up to 300 psig and 600 F, and pressure drops to 250 psig.

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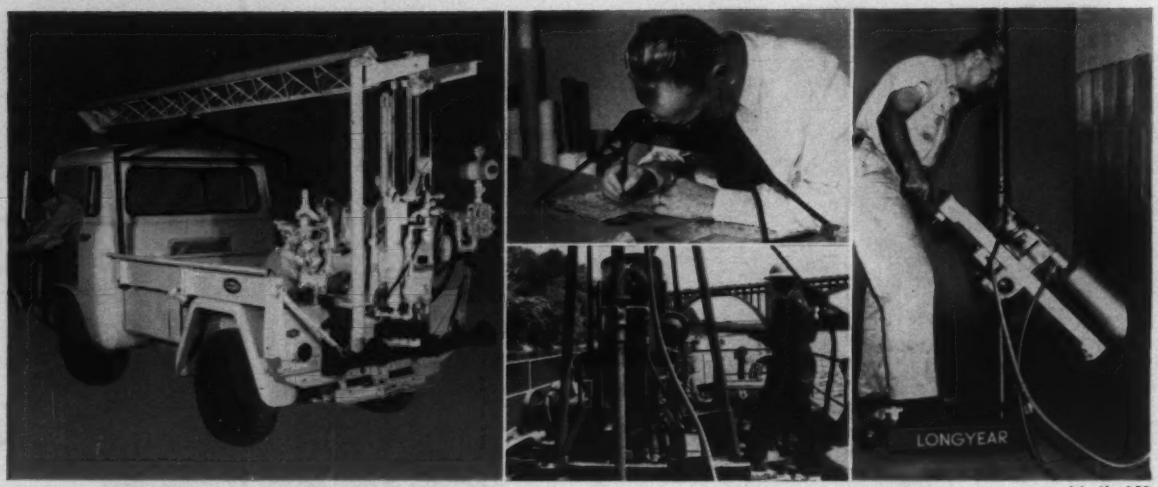


Adv. No. 158

Longyear

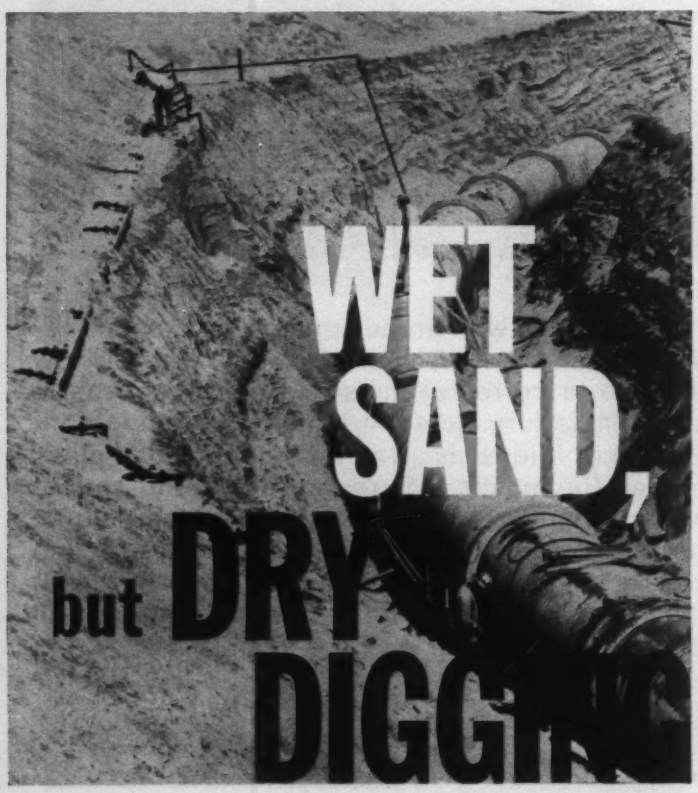
PRODUCTS: Diamond drilling equipment and supplies (left: *Unitized* Longyear "24" drill rig on 4-wheel-drive Jeep. Right: Longyear "330" diamond drill for holes in reinforced concrete, brick, tile, stone) . . . Longyear diamond bits.

WORLD WIDE SERVICES: *Contract Drilling*—Foundation testing . . . test boring by experienced drill crews with modern equipment . . . Grout hole drilling . . . *Consulting*—Air Photo Interpretation (site planning, road planning, location of aggregates) . . . Investigation and valuation of sand and gravel deposits . . . Consultation on underground storage sites.

E. J. LONGYEAR COMPANY
Minneapolis 2, Minnesota, U.S.A.

Member: Diamond Core Drill Manufacturers Assn.

CANADIAN LONGYEAR LTD., NORTH BAY, ONT./LONGYEAR ET CIE, PARIS, FRANCE/LONGYEAR N.V., THE HAGUE, HOLLAND/LONGYEAR de MEXICO, S.A. de C.V., SAN BARTOLO, MEXICO



JUST A FEW YARDS
from the surf line,
a Stang dewatering system
is predraining an excavation
area of beach sand.
Note the steep angle
and stability of
the slopes.
In any terrain,
with any water handling
problem, it will pay
you to contact Stang—
plan to on your
next job.

JOHN W. STANG CORPORATION
Engineers and Manufacturers of Dewatering Equipment
8221 Atlantic Avenue, Bell, Calif.
Omaha • Tulsa • Minneapolis • St. Petersburg
Mobile • Tacoma

Rock excavation is a major item on . . .

Vermont Road and Bridge Job

Thirty-five percent of this $2,593,873 contract for road and bridge construction on 2.66 miles of the Waterbury-Burlington Road, for the State of Vermont Department of Highways, goes for solid rock excavation of $1.60 a cu yd. An additional 2% goes for drilling of solid rock and solid rock subgrade.

William Poeter is commissioner of highways and John L. Hibbard assistant bridge engineer-design, at Montpelier.

Landers & Griffin, Inc., Portsmouth, N. H., bidding with Morrison-Knudsen Co., Inc., New York City, took the award on a low bid less than 1% under the second and only 2% below the third bid.

Work includes grading; drainage; subbase, with a bituminous concrete pavement surface course; removal and demolition of 19 buildings; landscaping; and related work and appurtenances, together with these five composite WF beam bridges:

Three-Span Bridges	Spans ft	Rdwy Width ft
On Rte. US-2	69.18-99.23-74.27	30
Interstate:		
Lft lane	100.22-99.41-100.30	30
Rt lane	98.26-99.02-98.19	30
Single Span Bridges		
Interstate:		
Lft lane	99	42
Rt lane	99	42

The above dimensions are given along centerline of roadway.

The bidding on this road and bridge job included:

1C Landers & Griffin, Inc., Portsmouth, N. H. & Morrison-Knudsen Co., Inc., NYC	$2,593,873
2 The Lane Constr. Corp., Meriden, Conn	2,612,248
3 Marinucci Bros. & Co., Inc., Dorchester, Mass	2,651,349

Bids: 4-22-60 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, common	cy	308,175	$0.40	$0.85
solid rock	cy	567,560	1.60	0.85
borrow	cy	25,021	0.40	0.85
trench, earth	cy	14,800	1.90	2.75
rock	cy	4,870	8.00	8.00
Clear & grub, modified	ls	job	77,000	20,000
Subgrade, fine grading	sy	181,100	0.09	0.10
Channel excavation, earth	cy	30,000	0.60	0.85
rock	cy	270	5.00	5.00
Structural excavation	cy	1,760	5.50	14.00
Rdwy patrol maintenance	da	56	85.00	70.00
Dust control	Mgal	1,150	3.70	4.00
Drill & blast solid rock	lf	2,750	1.50	0.90
subgr, mod	sy	45,500	1.00	1.00
Excavation, muck	cy	500	0.60	0.85
& remov surf on rdwys	cy	660	1.50	1.50
Bulldozer rental	hr	76	15.00	15.00
Subbase, gravel	cy	850	1.10	2.00
sand	cy	2,300	1.05	1.50
cr rock, mod	cy	108,400	4.00	4.10
under structs	cy	444	6.00	7.00
Cr stone base course	cy	17,225	6.00	6.50
Gravel overhaul, mod	cy/mi	6,980	0.10	0.10
backfill	cy	600	2.10	2.00
strip pits	cy	630	0.25	0.30
Cr stone shoulders	cy	3,830	6.30	5.50
Dbl tack ct of bit matl w pea stn & stn grits seal, pr ct of refin tar & dbl seal ct of cutbk asph, mod	gal	40,300	0.50	0.50
Single tack ct of cutbk asph w sand cover	gal	44,000	$0.30	$0.25
Cutback asphalt	gal	250	0.50	0.50
Bit conc pvmt, mod	t	14,670	8.50	8.50
Conc, cl B, mod	cy	3,813	48.50	60.00
Steel reinforcing	lb	446,150	0.12	0.14
Spiral reinf, sta 865+24	ls	job	7,650	6,600
sta 866+09.94	ls	job	3,400	3,100
sta 872+50	ls	job	2,550	2,200
Steel, struct	lb	2,045,694	0.12	0.10
Asph-asb coating	sy	176	4.75	5.00
Cement rubble masonry	cy	68	45.00	50.00
Reinf conc pipe, 18"	lf	2,060	5.60	5.00
24"	lf	328	8.00	8.00
30"	lf	376	10.00	11.00
36"	lf	620	12.00	14.00
42"	lf	410	15.00	17.00
Spec asph ctd corr galv met pipe elbow, 18"	lf	156	12.50	15.00
Asph ctd corr galv metal pipe, 15"	lf	110	4.50	5.00
18"	lf	2,254	5.20	6.00
24"	lf	712	7.40	8.00
30"	lf	106	9.00	10.00
36"	lf	190	13.50	14.00
48", 10 gage	lf	200	23.00	25.00
54"	lf	90	27.00	30.00
60"	lf	104	39.00	40.00
Pipe culverts, relay	lf	500	1.90	1.50
Met end sect for corr galv met pipe, 18"	ea	6	50.00	50.00
24"	ea	2	75.00	75.00
Sleeves for water pipe	lf	1,700	2.60	2.50
Furn equip to drive piles	ls	job	10,000	1,000
Piling, untreated timber	lf	12,840	2.10	2.00
splices for steel pilg	lf	34	32.00	35.00
steel	lf	9,636	4.50	5.50
Stone fill, heavy type	cy	19,314	4.00	2.50
for slope protect	cy	1,500	1.30	3.50
Riprap for bank protect, mod, for culvert ends	cy	80	11.00	20.00
Perf asph ctd corr galv met underdrain, mod, 6"	lf	6,100	2.80	2.75
CIP underdrain flushing basins w CI covers	ea	20	49.00	50.00
Drop inlet, pcst reinf conc pipe, w cover	ea	45	190.00	180.00
steel grates, 25x30"	ea	3	55.00	100.00
25x54"	ea	3	110.00	150.00
Grd rail, plank w preserv treatment	lf	160	2.90	3.00
2-cable	lf	176	1.60	1.50
3-cable w steel posts	lf	16,128	1.85	1.75
anchor for 2-cable	ea	2	42.00	45.00
3-cable	ea	114	47.00	45.00
Guide post, steel	ea	30	12.50	12.00
Marker post, steel	ea	105	6.25	7.00
Guard rail, remov & dispose of existing	lf	1,005	0.25	0.35
Bit grtd stone gutter	sy	70	5.30	7.00
Granite slop edging	lf	480	2.40	2.00
curb	lf	960	4.00	3.75
bridge curb, type 1	lf	2,331	5.50	4.50
Bit conc sidewalk	t	17	20.00	20.00
Project markers, erect	ea	2	26.00	20.00
Boundary markers	ea	55	12.50	15.00
Bridge railing	lf	2,022	10.00	9.00
Traffic signs, reflector, high density type overlaid plywood	sf	160	12.50	10.00
extruded alum panel	sf	800	12.50	10.00
flat sht alum	sf	30	11.00	6.00
Delineators	ea	140	5.30	6.00
Prop line fence, stl posts	lf	19,780	0.47	0.50
gates for, modified	ea	3	47.00	45.00
Buildings, dem & remov	ea	19	100.00	1.00
Cop wat tube, ¼" seamls	lf	1,900	1.10	1.00
Prepare exist pvmt for new wearing course	sy	8,100	0.08	0.10
Winter rye	lb	1,530	0.16	0.20
Seeding	lb	2,600	1.25	1.20
special	lb	80	1.25	1.10
Sodding	sy	250	1.15	1.10
Commercial fertilizer	lb	18,600	0.07	0.05
Topsoil	cy	5,200	2.00	1.00
Mulch, mod	t	68	50.00	45.00
Trees, shrubs & vines, mod, plant	ls	job	3,000	2,000

Commence: 5-23-60
Complete: 12-1-61

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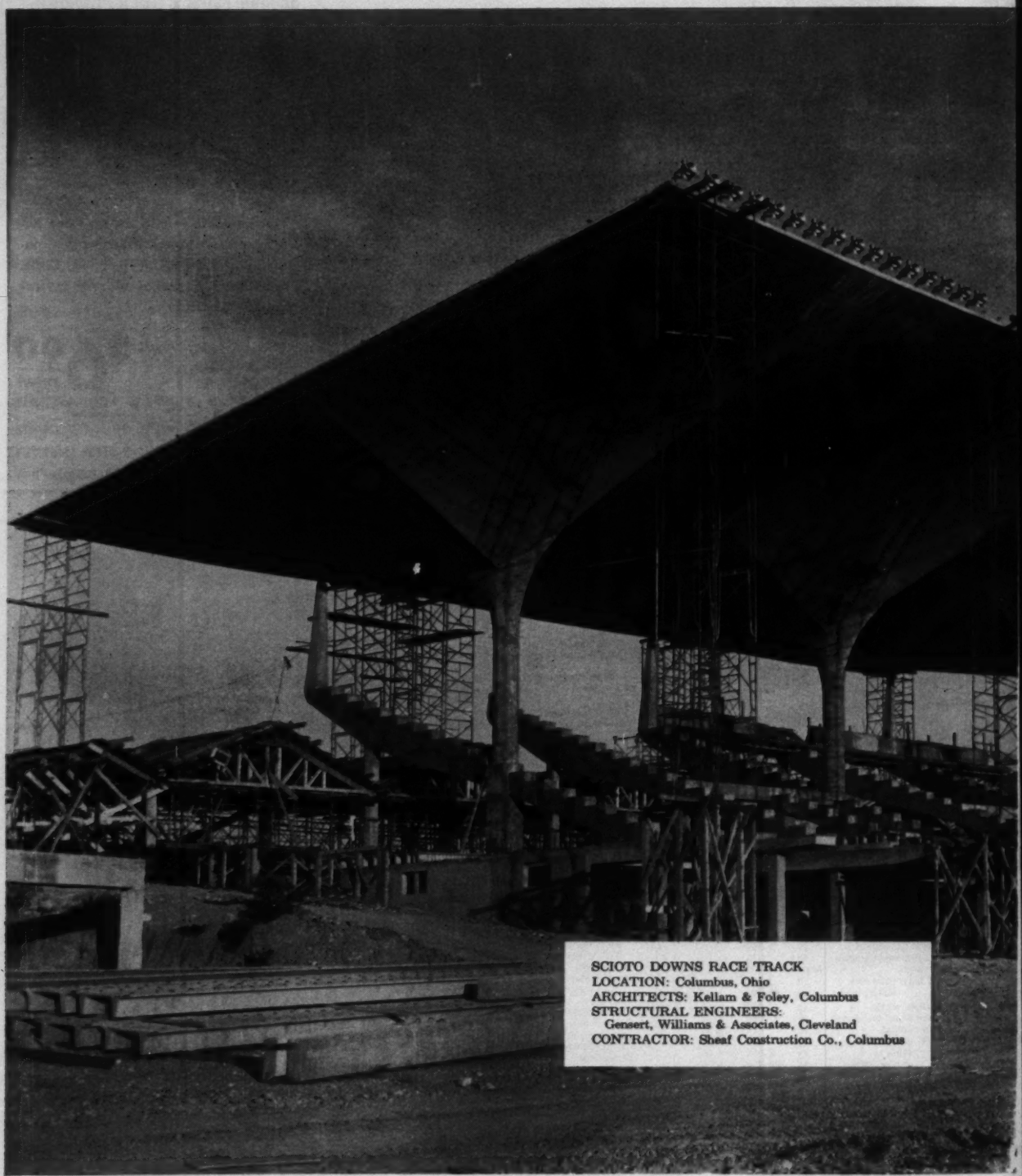
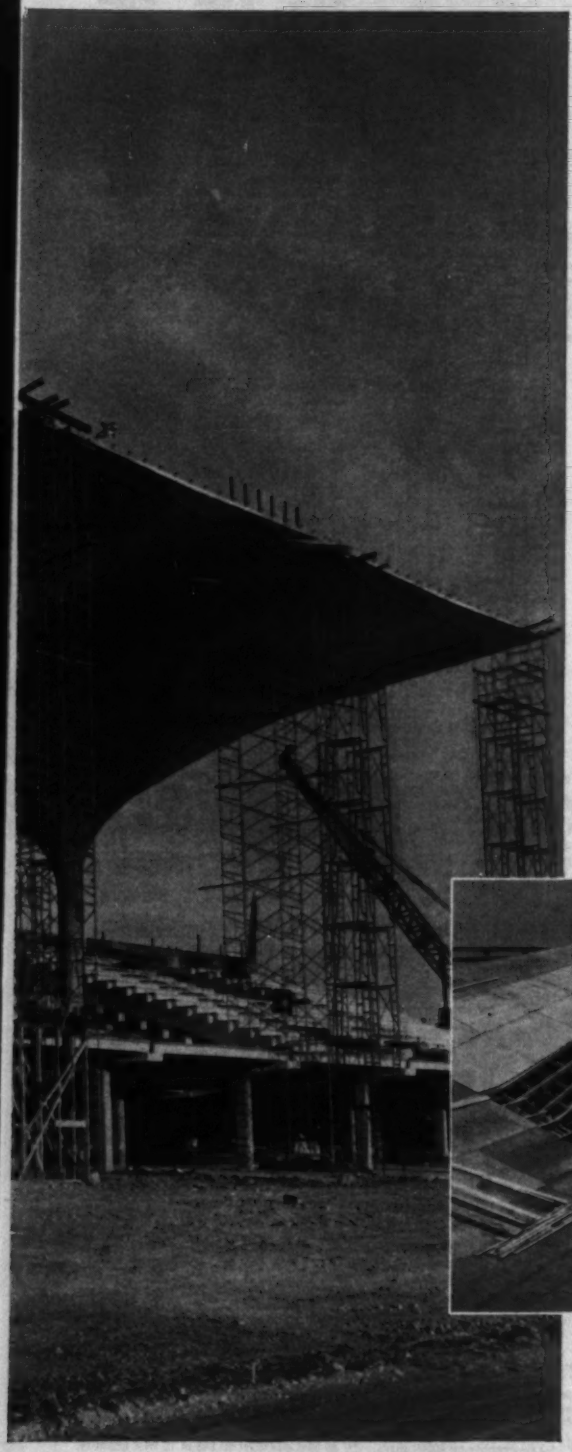
WASHINGTON, D. C.: TOWER BLDG.

Fir plywood helps solve problem on giant



SCIOTO DOWNS RACE TRACK
LOCATION: Columbus, Ohio
ARCHITECTS: Kellam & Foley, Columbus
STRUCTURAL ENGINEERS:
Gensert, Williams & Associates, Cleveland
CONTRACTOR: Sheaf Construction Co., Columbus

complex forming concrete umbrella roofs



PLYWOOD'S UNIQUE ADAPTABILITY as concrete form material simplified a complicated roof construction job at the Scioto Downs race track, Columbus, Ohio. At the same time, plywood created smooth concrete surfaces and kept costs low.

The striking grandstand roof is a series of huge hyperbolic-paraboloid concrete shells. Each 61 x 116-ft. section is supported by a 44-ft. column. The clubhouse and offices have thin-shell concrete folded plate roofs.

Plywood was shaped so easily to the complex curvatures of the grandstand roof, and made such tight joints, that the contractors found it needed no liner. Original specifications had been for lumber or plywood backing faced with hardboard for surface smoothness. But a single layer of ¾" plywood to do both jobs resulted in a smooth, fin-free concrete surface, besides eliminating the labor and material cost of applying liner.

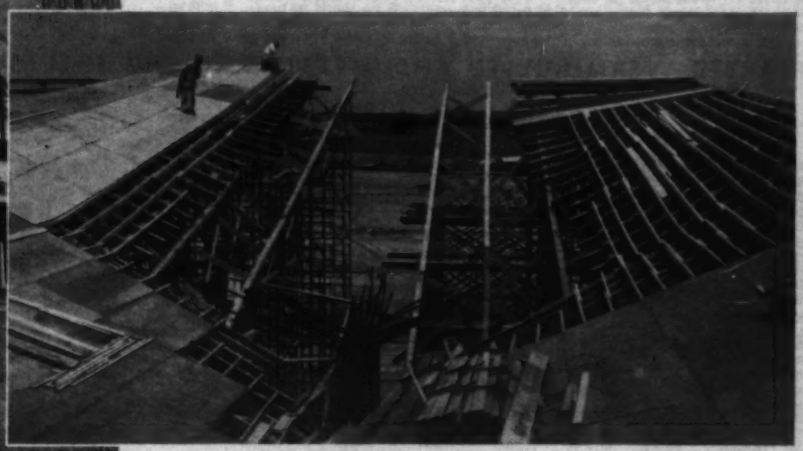
More savings came from plywood's ease of handling, which the contractors called a real cost cutter. And rate of re-use was exceptionally high. Panels stripped from the grandstand roof were used on the folded plates and were still good for many more times. There was only a four percent loss out of 10,000 sq. ft. of plywood.

DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON

—a non-profit industry organization devoted to research, promotion and quality control

DFPA TESTED QUALITY

ALWAYS SPECIFY DFPA-QUALITY TRADEMARKED PLYWOOD.
Concrete form grades include: INTERIOR PLYFORM® — made with moisture-resistant glue, gives up to 10-12 re-uses; EXTERIOR PLYFORM® — waterproof glue, gives up to 25 or more re-uses; OVERLAID EXTERIOR PLYWOOD — premium panel, forms smoothest concrete, gives up to 200 re-uses.



Grandstand roof forms were of ¾" fir plywood over a grid of 2x4's and 2x6's. Panels adapted readily to required curves, yet joints were tight and final concrete surface was smooth and even. Office building behind grandstand and clubhouse at side have continuous folded plate concrete roofs. They were formed against plywood panels previously used on grandstand roof.

Materials Prices

Monthly Market Quotations By ENR Field Reporters

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 In.	4x12x12 In.	8x12x12 In.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 6x12x12 In.	10x12x12 In.	12x12x12 In.	BRICK— Per M. in quantity Common backing	Straight hard	LIME— Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized
Atlanta	$186.10*e	$154.95*kke	$309.90*e	$348.65*e	.....	.....	$33.20uu	$36.70uu	$36.50hh	$28.50hh	$28.50hh
Baltimore	217.00	231.00	434.00	491.00	602.00	690.00	36.00	41.00	35.80	23.40	.....
Birmingham	135.00*ss	152.00*ss	.....	303.00*p	376.00*p	465.00*p	27.00*ff	38.00*jj	38.28mm	20.87mm	26.33*mm
Boston	232.00†mm	248.00†mm	463.25†mm	556.00†mm	.....	.....	43.50*p	58.00*p	42.00‡	34.00‡	.....
Chicago	137.00*ll	149.00ll	280.00ll	.....	.....	.....	32.00	34.00	38.00ll	35.20ell	.....
Cincinnati	179.00mm*rr	190.00†mm*rr	355.00ddmm	390.00†mm*rr	422.00†mm*rr	500.00†mm*rr	48.00*jk	47.00*jk	29.10†mm	29.10†mm	29.10†mm
Cleveland	205.00tt	219.00tt	.....	465.00tt	.....	709.00tt	43.25tt	47.25*gott	32.75*tt	28.00*ptt	.....
Dallas	155.00	155.00	306.00	370.50	452.25	560.00	30.00	50.00	41.80	24.58	28.80
Denver	170.00	185.00	310.00	310.00	390.00	442.00	35.00zz	54.00	50.00*p	44.00*p	46.00*p
Detroit	257.00mm	274.00mm	514.00mm	582.00mm	767.00mm	876.00mm	53.50*mm	54.00*mm	38.00mm	30.00mm	40.00mm
Kansas City	158.00	158.00	312.00	312.00	400.00	500.00	34.00	34.00	36.26	34.26	29.76
Los Angeles	*r	*r	*r	*r	*r	*r	38.00uu	.....	38.00mm‖	38.00mm‖	39.00mm‖
Minneapolis	208.00*e	225.00*e	452.00*e	225.00*ww	.....	.....	49.00*rr	57.50*rr	50.00†hh	40.00†hh	52.00†hh‡
Montreal	168.78Ruqoo	180.93muqoo	325 00muqoo	220 00qoo	400.00qoo	.....	48.25†ll	56.30†ll	39.00	22.00	13.25
New Orleans	178.00	178.00R	371.25	371 25	.....	.....	42.00	55.00	36.00	36.00	32.00
New York	185.00‡	197.00‡	294.00ch	297.00hn	.....	.....	46.00*p	.....	40.00*p	38.00*p	.....
Philadelphia	202.10ss	215.60ss	404.20sszz	485.10ss	.....	.....	42.00mm	50.00mm	40.00mm*p	21.50	21.50
Pittsburgh	200.00	213.00†	400.00†	453.00	607.00†	693.00†	42.00†	40.00†	30.00†	26.00†	34.00†
St. Louis	180.00mm*pp	190.00*pp	385.00*pp	410.00*ppp	459.00*pp	621.50*pp	44.00mm*pp	45.00*pp	1.00aapp	.80aapp	1.35aapp
San Francisco	156.85*mm	177.10*mm	235.30dd*mm	189.40qqmm	.....	.....	43.00*mm	43.00*mm	29.24mm	29.24mm	31.74mm
Seattle	235.00*t	270.00*t	490.00*t	265.00*ww†	.....	.....	57.00‡	71.00‡	52.00bb†	38.00bb†	4.50mbb†
Toronto	169.00rr	185.50rr	360 00rr	281.50frr	405 00rr	.....	27.00rr	65.00rr	42.00mm	38.00mm	38.50mm

*‡ F.o.b. yard. *** F.o.b. plant Stockton. *† F.o.b. yard Roxbury. *a Smooth. *b $4.50 del. *c 8 x 12 x 12 In.-6 cell. *d Pulverized hot. *e less 8% disc., 10th., 12 x 12. *f 8 x 8 x 12. *g Lumps, $26.72. *h F.o.b. trucks, job site N.Y.C. *i 60 lb sacks. *j Truck load or over. *k $1.00 discount per M, 10 days. *l Red face. *m Per bb 180 lb. processed. *n 7¾ x 7¾ x 12. *o Mason's double hydrated pressure. *p Truck lots. *q Provincial and Maritime tax extra (6%). *r Not used: earthquake danger. *s 8 x 16 x 12. *t less 2% disc., cash. *u Incl. Federal tax. *v Sand lime. *w 5 x 8 x 12. *x dumped. *y Chi common. *z Pebble; 80 lb sack. *aa 50 lb sack. *bb LCL. *dd 8 x 12 x 12. *ff 80% common. *gg Smooth. *hh less 25¢ disc., cash. *ii F.o.b. plant. *jj rough; smooth: $40. *kk 3½ x 11½ x 11½. *ll less 2% disc. 10th. *mm less 2% 10 days. *nn F.o.b., L. A. *oo less 2%, 30 days. *pp add 2% sales tax. *qq 8 x 5½ x 11½. *rr 2½% disc., 10 days. *ss 5% disc., 10 days. *tt less 2% disc., 15th. *uu less 50¢/M. 10 days *vv 4000 pcs. and over. *ww 5 x 8 x 12. *R revised eff. 7/1/59, direct delivery from manufacturer.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600 lb. (Approx.) bbl. F.O.B. Plant Dry a C	WHITE LEAD Per 100 lb. in 100 lb. casse in oil	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$13.75ggJO	$24.00ggJ	$3.59	$3.86	$3.31	$2.90kk	$2.25kk	$2.85kk	$0.67kk	$65.35kk
Baltimore	17.50pp	24.00	3.00	4.40	3.50	3.06	3.67	4.04	.50	54.00
Birmingham	26.00†J	29.00†J	3.90J	3.40J	....	2.95†mm	2.17ii†mm	3.17ii†mm	.76ffmm	48.00eemm
Boston	24.95†oomm	26.90†mmm	....	....	....	3.30q	2.79g	2.83g	.55g	58.00g
Chicago	15.25rJqqpp	24.00†J	....	....	....	3.45ukk	2.50okk	3.00okk	48.00bbkk	57.70†kk
Cincinnati	15.25†JO	24.00†J	....	....	....	2.74mm	2.02mm	2.42mm	.53mm	55.96Hmm
Cleveland	25.65†	26.90†	2.63ggP	2.78zzgg	3.44qqq	2.74q	1.87o	2.35o	.39y	49.00gg
Dallas	22.50	23.50M	....	3.25B	....	3.00u	3.00o	3.00o	.470	66.00kk
Denver	23.85n	24.00	3.70	5.10	3.70	2.71	1.93o	2.80o	.50ff	50.00
Detroit	15.75r	24.00rr	2.70mm	3.95mm	2.70mm	2.82mm	1.81mm‖	2.23mm‖	.58ffmm	49.00mm
Kansas City	26.90lqqoo	25.65	3.99	3.43	3.01	3.00mm	2.50mm	2 50mm	.55y	.....
Los Angeles	16.25yy	22.00	3.30n	4.50n	4.20n	3.40nikk	2.40nikk	l	.75nphk	l
Minneapolis	17.25N	21.50kk	....	....	....	2.50kk	1.95hikk	2.36hikk	.52ikk	50.00vkk
Montreal	19.45O	26.00w††	5.52Dff	6.55zff	5.10kff†	5.40	4.65†	4.65†	1.60	4.40uu
New Orleans	23.00Jpp	24.00J	....	....	....	2.78	1.98	2.85	.680	45.50
New York	15.75ooO	29.75	....	....	....	2.79zz	2.05zzo	2.46o	.52z	49.00*
Philadelphia	16.25Om‖	24.75mm	3.35mm	3.90mm	2.65Rmm	4.70	3.60	2.85	.515	50.00
Pittsburgh	21.00mggJ	24.00J	2.20†EJ	2.25†FJ	2.25†GJ	2.90nH	2.15nH	2.15H	.56H	55.00H
St. Louis	K 25.65†m	26.90	....	....	....	3.25iimm	2.37hhK	2.84hhK	.48gK	62.00K
San Francisco	26.70mm	26.90mm	3.20mm	4.30mm	3.50mm	2.87mm	1.72aaiimm	2.59mm	.46jj	54.00
Seattle	13.35HO	24.00H	....	4.19ccffJJ	....	3.70qccH	3.06kccH	....	.59cc	.....
Toronto	14.45	20.85	5.15J	6.18J	5.95J	3.25	2.75aaz	2.75o	1.01‡	56.00A

*† Delivered. * Note: Red lead in oil 50% higher than white lead in oil. ** Aver. wt. approx. 425 to 550 lb drums. *a Red lead prices change frequently due to pig lead price changes. *b U.S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e Per 100 sf roll. *f Per 432 sq ft. *g F.o.b. yard Roxbury. *h Per roll, 65 lb. *i Net carload prices, Minneapolis and vicinity. *j 45 gal containers. *k Over 80% ferric oxide. *l Not used. *m 100 lb. keg. *n F.o.b. city. *o Per 60 lb roll. *p 6-drum, 50 gal each. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Incl. Federal tax. *u Per 90-lb square. *v Per ton. *x Ready-mixed. *y 55-gal container. *z Drums. *aa 15 lb. *bb Roofers coating and cement. *cc LCL, truck delivery. *ee Asphalt pitch in 100 lb package. *ff 5-gal drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per 324 sf roll. *jj Asbestos roof coating. *kk less 2% disc., 10th. *mm less 2% disc., 10 days. *oo 100 lb bbls. *pp 50 or 100 lb bags. *qq 500 lbs or more *rr F.o.b. plant, Detroit. *ss 50 lb bbls. *tt 25 lb kegs. *uu 250 lb bbls. *xx Sept.: Rolls revised to $2.75, Asph. Felt revised to 1.71. *yy Sept. revised to $12.00. * zz Sept. revised to $2.80. *A 400 lb barrels. *B ASTM Spec. D962-49. *C 98%. *D Std. black. *f Milit. spec.: ETTP27; FTTY81; GTTP31. *H less 2% disc., cash. *I Per 100 lb. *J less 1% disc., 10 days. *K add 2% sales tax. *L CL. *M 1 ton or more. *N under 500 lbs, add $1. *O 50 lb. bag.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER‡ Neat per ton	Gauging per ton	VERMICULITE‡ Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated	PERLITE‡ Plaster Aggregate	Concrete Aggregate Untreated	ALUMINUM Flat .100" th 36"x108" & 48"x144" per lbjt	SHEET† Corr roof .032" th 35"x12' per shu	STAINLESS STEEL† SHEET-TYPE 302g 20 ga 48"x96'-120' per cwthh	28 ga 36"x120' per cwtmm	COPPER WATER* TUBING-TYPE L 2000 ft lots per ft ¾"b	½"c
			per bag of 4 cu ft										
Atlanta	$32.00ss	$42.00ss	$1.55ss	$1.65ss	$1.80ssss	$1.65ss	$1.65ss	$0.463noo	$27.17nY	$65.68nzz	$74.43nzz	$0.1762ss	$0.2464ss
Baltimore	24.00	35.70	0.95	1.15	1.15	1.15	1.55	0.485	0.451r	63.00	71.25	0.16	0.23
Birmingham	37.00ss	43.00ss	1.55ss	1.55ss	1.60ss	1.27ss	1.27lss	0.455M	9.62K	65.54K	73.79K	0.20ss	0.27ss
Boston	24.00	30.00	1.40	1.40	1.40	1.55ss	1.55ss	0.462	24.66pAA	64.42dd*zz	72.67dd	0.1762ss	0.2464ss
Chicago	26.80tt	26.80tt	1.55	1.60	1.60†	1.60	1.60	0.516z	32.88p	64.15zz	72.40zz	0.1814	0.2545
Cincinnati	23.85*ss	23.85*	1.75*ss	1.75*ss	1.85*ss	1.85ss	1.90ss	0.514	9.21	65.30zz	74.05zz	0.1814ss	0.2545ss
Cleveland	28.00N	45.00N	1.14ss	1.16ss	1.24lss	1.45ss	1.45ss	0.455nn	8.48	63.33oozz	71.58oozz	0.1723	0.2418
Dallas	30.65	30.65	1.05	1.21	1.37	1.21	1.32	0.463	0.461r	64.09	72.34	0.1668	0.1986
Denver	27.00	27.00	1.50	1.40	1.50	1.50ss	1.60ss	0.475	10.89	65.32gg	73.57gg	0.1772	0.2380
Detroit	28.00ss	28.00ss	1.27ss	1.31ss	1.40ss	1.45ktt	1.50ktt	0.475s	10.35s	63.00azz*	71.25azz*	0.2058	0.2887
Kansas City	30.00	35.00	1.19E	1.21E	1.29lE	1.21	.....	0.463	24.66ggvvp	67.50E	76.25E	0.1814	0.2545
Los Angeles	27.00tt	28.00tt	1.25ktt	1.20ktt	1.45tt	1.11	1.11	0.515	9.77Z	65.02	73.27	0.1814	0.2545
Minneapolis	35.00F	35.00F	1.65†	1.80F	1.95F	1.40S	1.50S	0.485	16.23	63.61GR	69.61ffG	0.1446†	0.2025
Montreal	27.60h	35.60h	1.25h	1.40h	1.60h	1.15r	1.15r	43.95AH	12 10H	65.75H	.....	0.1978	0.2089
New Orleans	34.00	48.00	1.25P	1.35P	1.45P	1.15P	1.15P	0.463	32 88	61.24Y	72.00Y	0.2058	0.2887
New York	27.00	35.00	1.40	1.35	1.40	1.35	1.40	0.485aT	0.2466aXAA	64.08ss	72.33ss	0.1670	0.2345
Philadelphia	26.50	31.00ss	1.40ss	1.40ss	1.55lss	1.35ss	1.35qqss	0.485	9.46	63.71	71.96	0.1814	0.2545
Pittsburgh	30.00nn	31.00nn	1.25nn	1.30nn	1.40nnn	1.40nn	1.40nn	0.475	10.39	63.00	74.50pp	0.1600	0.1800
St. Louis	30 00uu	42.00uu	1.50uu	1.60uu	1.65uu	1.50uu	1.60uuY	0.475	10.69	63.39Kmmqq	69.39yuuqq	0.1814/mss	0.2545/mss
San Francisco	29 50ss	30.50ss	1.38ss	1.38ss	1.50ss	1.38ooss	1.58ooss	0.575	10.83	65.00K	77.25K	0.1814	0.2545
Seattle	42.40nn	45.60nn	1.85nn	1.35knn	1.85lnn	1.50k	.....	0.46D	10.40D	54.02D	73.27D	0.1756	0.2460
Toronto	.82	1.31	1.45	1.48	1.75	1.20Q	.....	0.4295	26.00ap	73.74	86.52	0.3063	0.3418

‡truckiots, delivered †fob warehouse *fob city *a delivered *b ½" O.D. *c ¾" O.D. *d per sf *e 34" x 60" sheet *f per 100 ft *g 5 tons & up: cold roll, anneal & pickled 2B finish *h incl. Federal tax *i add 25¢ for pint of additive *j 1100 & 3003 alloy, mill finish *k bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob mill' fr equalized with nearest stocking competitor *o 250 sacks or more *p 100 sq ft *q per lb *s 30 lb bag *t 36" x 108"; 10.81 lb/sh; 48" x 144"; 21.7 lb/sh *u 19.31 lb/sh *v fob plant *w 48" x 144" *x 0.11"th *y 27 gauge *aa 18M lb & up *bb Per 50 lb bag *dd add $1.00 cwt boxing *ee 4 tons & up *gg add $2/cwt boxing; $0.75/cwt on skids *hh Theoretical wt for 48" x 96"; 60.4-lb. per sh *ii 300-bag lots *jj 100-lb bag *mm Theoretical wt: 19.7-lb per sh *nn 2% cash *oo skid packed *pp type 304 *qq Philadelphia and suburbs. *rr less 2% disc. 15 days. *ss less 2% disc. 10 days. *tt less 2% disc. 10th. *uu add 2% sales tax. *vv Type N. *xx less ½% disc. 10 days. *yy .021 ga. *zz .061" th. *A Per 100 lb. *C 15M lb. *D less ½% for cash. *E Quantity differential. *F less 5% disc. 10th. *G less ½% disc. 10th. *H Fed. tax exempt. *K less ½% 10 days. *L 5% disc. 30 days. *M 3003: .452 for 1100. *N less 2% 15th mo. *O less $2, cash & carry. *P less 2% 15 days. *Q per ton. *R revised *S add .10/bag under 200 bags. *T 5000f quantity on 4000f skids. *U 30 Msf quantity; $0.245 in 10 Msf quantity. *X per sq ft. *Y Per sheet. *Z 6,000 lb or over. *AA 39,000 sf or over.

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

HOURLY WAGE RATES—Base rate + fringe benefits

	Common Labor: Building	Common Labor: Heavy Const	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$2.00	$2.00	$4.00	$3.35	$3.45+7½¢	$3.60	$3.39	$3.50+10¢	$3.80+20¢	$1.90	$2.00	$2.25*B*
Baltimore	2.27+7½¢	2.27+7½¢	4.20+20¢	3.60+7½¢*f*	4.00+17*8*¢	3.35/4.05+10¢*A*	3.80+10½¢	3.75+7½¢	3.74+9½¢	2.15+7½¢	2.15+7½¢	2.25+7½¢
Birmingham	1.85	2.00	3.95	3.15	3.65+10¢*mn*	3.18	3.27	3.65	3.58+12¢*p*	1.90	2.10	2.35
Boston	2.75+10¢*R*	2.55+10¢	3.80+20¢	3.65+10¢	4.02+20¢	4.05+20¢	3.65+45¢	3.90+25¢	3.95+27¢*R*	2.70+23¢	2.70+23¢	2.70+23¢
Chicago	3.02½+7½¢	3.02½+7½¢	4.225+10¢	3.91+20¢*o*	4.35+16¢*n*	3.90+5¢	4.00+27¢	4.30	4.10+25¢	2.37+175¢*R*	.....	.....
Cincinnati	2.90	2.80	4.025+12¢	3.90*D*	3.95+10¢	3.575/3.80*A*	3.875+.04	4.09+.511	4.10+9½¢	2.65+62½¢	2.70+6½¢	2.75+6½¢
Cleveland	3.37*b*	3.285*b*	4.085+10¢*b*	4.11*b*	4.01+10¢*b*	4.11*b*	4.11*a*	4.17*b*	3.91+20¢*b*	2.92+15¢*m*	2.92+15¢*m*	2.92+15¢*m*
Dallas	1.85	1.85	4.10	3.35*b*	3.55+7½¢	3.50*B*	3.75+13¢	3.625+7½¢	3.70+8½¢	1.80/2.625	1.80/2.625	1.80/2.625
Denver	2.32	2.32	4.00	3.60	3.66+10¢	3.25	3.75+12¢	4.05+47¢	3.95+10¢	2.40/2.60*B*	2.75*B*	2.90*B*
Detroit	2.90+34¢	2.90+34¢	3.98+33¢	3.63+45¢	4.00+27½¢	3.63+39½¢	3.75+38¢	4.00+52	3.835+17½¢	3.03+175¢	3.03+175¢	3.03+175¢
Kansas City	2.58	2.63	4.075	3.625	3.675	3.445	3.875	3.75+352¢	3.80+9½¢	2.555	2.555	2.63
Los Angeles	3.08+10¢	3.08+10¢	4.20+25¢	3.825+20¢	4.07½+23½¢	3.81+20¢	4.25+42½¢	4.65+46	4.33+64¢	3.365+10¢	3.365+10¢	3.355+10¢
Minneapolis	2.85	2.85	4.025	3.45	3.62	3.60	3.60+33¢	3.70+40¢	3.77+20¢	2.85	2.85*d*	3.00
New Orleans	1.87½¢	1.87½¢	3.67½+7½¢*d*	3.25*d*	3.55+10¢*d*	3.375+7½¢*d*	3.27+5¢*jk*	3.90+7½¢	3.70+7½¢*dll*	3.375+7½¢*d*	3.375+7½¢*d*	3.375+7½¢*d*
New York	3.45+28¢	3.45+28¢	4.80+60¢	4.55+36¢*k*	4.60+65¢*j*	4.80+38¢	4.50+62¢	4.45+1.424	4.50+54¢	2.35+22½¢	3.40+28½¢	3.40+28½¢
Philadelphia	2.55+10¢	2.60+15¢	4.25+17¢	3.885	4.30+23¢	3.935/4.215+10¢*A*	4.15+20¢	4.37½+16¢	4.20+31½¢	2.45+15	2.45+15½¢	2.45+15
Pittsburgh	2.725+20¢	2.55+20¢	4.45+20¢	3.975+20¢	4.15+20¢	3.73+20¢	3.95+20¢	4.60+34½¢	4.15+20¢	2.50+20¢	2.635+20¢	2.735+20¢
St. Louis	2.875+10¢	2.875+10¢	4.05+32½¢	3.825+10¢*c*	3.85+7½¢	3.95	4.00+07½¢	4.11+31¢	4.27½+25½¢	2.90+15¢	3.10+15¢	3.20+15¢
San Francisco	3.045+10¢	3.045+10¢	4.25+42½¢	3.725+36¢	4.075+22½¢	3.80+25¢	3.79+63¢	4.22+29¢	4.36+72¢	3.19+11¢	3.27+11¢	3.08+11¢
Seattle	3.00*R*	3.00*R*	4.15+30¢	3.38+20¢	3.76+10¢	3.84+20¢	3.72+30¢	3.95+27¢	3.81+24¢	3.40+20¢	3.40+20¢	3.60+20¢
Montreal	1.75+4¢*q*	1.75+4¢*q*	2.58+6¢*q*	2.35+5¢*q*	2.55+6¢	2.35+5¢	2.65+6¢	2.48+5¢	2.62+6¢*o*	1.75+4¢	1.75+4¢	1.75+4¢
Toronto	2.00+8¢	2.00+8¢	3.15+13¢	2.90+12¢	3.05+12¢	3.15+13¢	3.20+21¢	3.52+14¢	3.35+13¢	2.05+15¢	2.05+15¢	2.05+15¢

	Tractor Operators Incl. bulldozer: 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-18 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$3.00	$3.075	$3.075	$2.925	$3.45	$3.60	$2.925	$2.85	$2.00
Baltimore	3.65+10¢	3.65+10¢	3.65+10¢	3.65+10¢	4.05+10¢	4.05+10¢	3.65+10¢	3.25+10¢	2.25+7½¢
Birmingham	3.18	3.18	3.18	3.18	3.18	3.18	3.18	2.77	2.05
Boston	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.90+20¢	3.90+20¢	3.52½+20¢	3.45+20¢	2.80+10¢
Chicago	3.65+5¢	3.80+5¢	3.70+5¢	3.70+5¢	4.25+5¢	4.25+5¢	3.70+5¢	3.55+5¢	3.85+5¢
Cincinnati	3.575+10¢	3.575+10¢	3.575+10¢	3.575+10¢	3.575+10¢	3.80+10¢	3.80+10¢	3.80+10¢	3.80+10¢
Cleveland	3.86*b*	3.86*b*	3.86*b*	3.86*b*	4.11*b*	4.11*b*	3.86*b*	3.735*b*	3.735*b*
Dallas	1.80/2.625	1.80/2.625	1.80/2.625	1.80/2.625	3.225*h*	3.225*h*	1.80/2.625	2.00	2.00
Denver	2.50	3.10	3.10	3.10	3.25	3.25	3.10	3.10	2.60
Detroit	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.363+395¢	3.03+34¢
Kansas City	2.75	3.20	3.20	3.20	3.445	3.445	3.20	3.20	2.675
Los Angeles	4.11+20¢	4.11+20¢	4.11+20¢	4.21+20¢	4.21+20¢	4.21+20¢	4.21+20¢	3.33+20¢	3.29+10¢
Minneapolis	3.23	3.45	.....	3.45	3.67	4.03	3.23	3.12	3.00
New Orleans	3.375+7½¢*d*	3.375+7½¢*d*	3.375+7½¢*d*	3.725+7½¢*d*	3.375+7½¢*d*	3.375+7½¢*d*	3.375+7½¢*d*	2.70+7½¢*d*	1.975
New York	4.175+33¢	4.175+33¢	4.175+33¢	4.30+34¢	5.05+40¢	5.05+40¢*k*	4.30+34¢	4.30+43¢	4.30+22¢
Philadelphia	3.63+10	3.775+10	3.775+10	3.90+10	4.345+10	4.345+10	3.765+10	3.51+10	2.40/2.50+10¢
Pittsburgh	3.72+20¢	3.72+20¢	3.72+20¢	3.72+20¢	3.92+20¢	3.92+20¢	3.92+20¢	3.43+20¢	2.60+20¢
St. Louis	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.40	3.40
San Francisco	4.01+28¢	4.01+28¢	4.01+28¢	4.01+28¢	4.31+28¢	4.31+28¢	4.21+28¢	3.48+28¢	3.475+10¢
Seattle	3.81+20¢	3.81+20¢	3.81+20¢	3.81+20¢	4.18+20¢	4.18+20¢	3.90+20¢	3.54+20¢	3.20+10¢
Montreal	1.95+4¢	2.18+5¢	2.18+5¢	2.18+5¢	2.45+5¢	2.45+5¢	2.18+5¢	2.05+5¢	2.05+5¢
Toronto	2.40+10¢	2.50+10¢	2.50+10¢	2.50+10¢	3.00+12¢	3.15+12¢	2.80+11¢	2.50+10¢	2.50+10¢

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $4.052, ENR Common Average $2.734

Description of fringe benefits last appeared Sept. 17 1959. *A 1-2 drum. *B revised

DEFERRED WAGE INCREASES UNDER PRESENT CONTRACTS: 1960: a May 1; 10¢ b May 1; 12¢ k May 1; 8¢ l May 1; 10¢ m Jan. 1; 15¢ n Jul. 1; 5¢ o Jun. 30; 22½¢ s Apr. 1; 15¢ **1959:** c Dec. 1; 10¢ d Nov. 1; 10¢ e Nov. 1; 5¢.

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft: ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft: ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft: ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft: ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft: ½"	MINERAL WOOL INSULATION loose, per 40-lb bag	3" batts per M sf	GLASS FIBER INSULATION loose, per 40-lb bag	3" batts per M sf	ALUMINUM FOIL 60# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers fo il per Msq ft
Atlanta	$65.00*F*	$55.00*F*	$42.50*F*	$68.00*F*	$72.00*F*	$127.00*F*	$75.00*F*	1.50*z*	$70.00*F*	$2.00	$80.00*F*	$4.77*qi*	.....
Baltimore	54.00	47.50	35.75	55.70	65.00	108.50	69.00	1.40*F*	67.50*F*	1.60*F*	47.00*F*	4.00*F*	$33.50*F*
Birmingham	68.90*H*	57.00*H*	47.77*H*	75.00*H*	67.50*H*	140.50*H*	83.50*H*	1.40	70.00	2.00	65.00	3.77*gG*	.....
Boston	60.00*mH*	50.00*mH*	35.00*mH*	55.00*mH*	65.00*H*	120.00*H*	79.00*knH*	1.40*bH*	75.00*H*	.....	75.00*H*	5.30*zHS*	53.50*qH*
Chicago	67.00	54.00	45.00	62.00	87.00	123.00	87.00	1.85	80.00	.....	63/65*t*	5.35*j*	.....
Cincinnati	52.50*wH*	42.85*wH*	33.05*wH*	51.16*wH*	77.00*wH*	125.00*wH*	72.50*wH*	1.45*wH*	62.50*wH*	1.45*wH*	62.50*wH*	2.85*jwJ*	50.00*wJ*
Cleveland	62.00*CF*	56.50*CF*	41.50*CF*	65.00*CF*	80.00*CF*	129.00*CF*	80.00*CF*	1.35	75/80*H*	.....	67.00	14.00*iwJ*	55.00*J*
Dallas	56.25	46.85	42.50	56.25	68.75	118.00	68.75	2.00	65.69	1.45	70.67	5.00*gAG*	45.00
Denver	66.50*H*	58.50*H*	45.00*H*	68.75*H*	84.00*H*	130.00*H*	84.00	1.55*b*	65.00*wb*	2.00*b*	65.00*a*	5.25	48.65
Detroit	66.00*K*	56.00*K*	42.45*K*	66.00*K*	48.50*DK*	85.65*DK*	62.50*DK*	1.30*b*	52.00	1.85*b*	80.00	.....	.....
Kansas City	72.00*H*	62.00*H*	45.00*H*	.....	75.00*H*	122.00*H*	80.00*H*	1.40*H*	75.00*H*	1.80*H*	75.00*H*	3.60*d*	60.00
Los Angeles	66.00*F*	60.50*F*	0.33*zF*	64.50*F*	75.00*F*	125.00*F*	80.00*F*	76.00*BeF*	83.00*F*	1.35*s*	64.00	4.40*g*	7.45*V*
Minneapolis	75.00*F*	65.00*F*	0.41*zL*	75.00*F*	95.00*F*	130.00*F*	78.00*F*	2.25*yF*	80.00*F*	2.10*F*	80.00*F*	4.25*F*	.....
Montreal	58.00*M*	49.30*M*	37/41.50*M*	53.00*M*	64.75*M*	.....	58.50*M*	1.50*M*	66.00*M*	1.80*M*	66.00*M*	9.00*qM*	56.00*M*
New Orleans	57.00*H*	52.00*H*	45.00*H*	60.00*H*	67.00*H*	140.00*H*	80.00*H*	3.00*L*	70.00*	.....	.....	.....	52.12*U*
New York	65.00*H*	55.00*H*	42.50*H*	60.00*H*	78.00	124.00	78.00	1.55*b*	68.50*k*	.....	.....	4.38*iH*	40.00*eH*
Philadelphia	*H* 53.00	46.00	37.50	53.50	70.00	120.00	70.00	1.35	50.00	1.40	50.00	3.85	83.50
Pittsburgh	74.00*K*	65.00*K*	40.00*K*	63.00*K*	60.00*K*	100.00*K*	60.00*K*	1.25*sK*	55.00*K*	1.25*sK*	55.00*K*	4.25*iqK*	38.50*K*
St. Louis	55-65.00*HO*	48-55.00*HO*	40.00*HO*	65.00*HO*	70.00*HO*	115/120*HO*	75/80.00*HO*	125/135	65-75*HO*	2.00*PHO*	74.00*HO*	4.50*iqHO*	.....
San Francisco	60.00*F*	49.00*F*	0.36*zF*	61.00*F*	70.00*F*	111.00*F*	69.00*F*	1.75*F*	66.50*F*	1.75*F*	66.50*F*	5.10	60.00*F*
Seattle	68.00*K*	58.50*K*	51.50*K*	65.50*K*	65.00*K*	125.00*K*	71.00*K*	1.18*tK*	58.00*K*	1.90**pK*	51.00**lKA*	4.25*K*	46.50*EK*
Toronto	58.00	50.00	50.00*L*	67.50	79.00*T*	.....*m*	88.00*T*	1.85	72.00	.....	72.00	15.00*a*	48.00

**F.o.b. warehouse. *a Semi thick. *b 30# bag. *c 3 layers of foil: $34.50. *d 40# kraft paper, 5 Msf, 100/500 rolls. *e 20# sq ft bag, 4" thick. *f Full trailer loads. *g 80# kraft paper backing 400 rolls or over. *h LCL. *i 40#. *j 80#. *k 2-in. *l 2". *m 8 to 10 ton quantities. *n Distributor's siding. *o Per Msf roll. *p 32# bag. *q 500 sf. *s 35# bag. *t 25# bag *u Flame proof $75. *v 5000 sf quantity. *w F.o.b. city. *x Sq. yd. *y 30# bag. *z Spun rock wool. *A 950 sf. *B ton. *C F.o.b. plant, freight allowed. *D CL. *E 10 Msf. *F less 2% disc, 10th. *G ½ of 1%, 10 days. *H 2% disc, 10 days. *J 1% disc, 10 days. *K less 2% for cash. *L 5% disc, 10th mo. *M fed. tax incl. *N 1% disc, 10 days. *O add 2% sales tax. *P 50 lb. bags, *Q add 4% sales tax. *R revised. *S 45 lb. *T less 2%, 30 days. *U lots of 2808 sq. ft. *V 250 sf roll.

MEXICO CITY WAGES & PRICES

WAGES, av per week, 8 hr day (pesos)*a		July '60
Common labor,	building (peons)	101.50
	heavy const (peons)	136.50
Skilled labor,	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct. ironworkers	315.00

*a 6 days work-extra day's pay

MATERIALS PRICES, F.o.b. City (pesos)		July '60
Struct. steel shapes, fob Monterey		
I-beams, 3 x 3 x 4"	per metric ton	2700.00
Reinf. steel, corrugated rods, per ton		
⅜"-½" x 11 meters consolidada		2000.00
¼"-1" x 11 meters		1900.00
Gravel, truckload, per cu meter		
Blue gravel		33.00
Cement, std. port. (Tolteca)	per metric ton	280.00
Lumber, 2" x 4" 1st class pine 20 ft.	per M sq. ft.	2900.00
2" x 4" 2nd class pine	per M sq. ft.	2400.00

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Medway**—SCHOOL—BA 8/11—Town, Town Hall, junior-senior high school. $1,194,000. Plans deposit $100. Korslund, LeNorman & Quann, Inc., 506 Washington St., Norwood, Mass., archt. CD 2/26/59.

Mass., Arlington — SCHOOL — BA 8/17 — Town, Supt. Schools, 23 Maple St., elementary school, Pleasant Ave. $700,000. Plans deposit $100. Rich P. Tucker Assoc., Inc., 45 Newbury St., Boston, archt. CD 10/19.

HEAVY CONSTRUCTION—LB & CA

▲ **Maskel Constr. Co., Inc.,** Rte. 5, South Windsor, Conn., CA $579,423, Contract 1, 41,477 ft. 6- to 12-in. clay cement asbestos pipe sanitary sewers, various highways and 120 manholes 1 underground pumping station, GLASTONBURY, CONN. Town, Sewer Comn., Town Hall, Glastonbury, Conn., Bids June 28, awarded July 14. CD 7/11, under LB;
Barr Constr. Co., 250 Allen Ave., Meriden, Conn., CA $590,045, Contract 2, 30,909 ft. 6- to 19-in. clay and cement asbestos pipe sanitary sewers, various highways, 90 manholes, 1 underground pumping station, (Glastonbury, Conn.).

BUILDINGS—LB & CA

▲† **Base Procurement Office,** Dow Air Force Base, Bangor, Me., received no bids July 15, Capehart HOUSING, Dow Air Force Base, IFB-17-601-60-37, BANGOR, ME. $6,000,000-$7,000,000. CD 6/21.

▲ **Sheridan Corp.,** 34 Silver St., Waterville, Me., CA $1,100,000, PROCESSING PLANT, EASTON, ME. F. H. Vahising Co., Alfred Litz, Station St., Easton, Me. CD 5/4.

▲ **Franchi Constr. Co., Inc.,** 216 Webster St., West Newton, Mass., LB $1,042,418, family type HOUSING; LB $763,794, women's DORMITORY W-2, ORONO, ME. University of Maine, Orono, Me. Bids July 15. CD 7/5.

Harvey Constr. Co., Inc., 1662 Elm St., Manchester, N. H., CA $996,000 JUNIOR HIGH SCHOOL, Opechee Park, LACONIA, N. H. City, 26 Academy St., Laconia, N. H. Bids June 17. CD 7/12, under LB.

▲ **Walsh Brothers,** 150 Hampshire St., Cambridge, Mass., CA $1,532,360, MEDICAL RESEARCH FACILITIES, vicinity Mass. General Hospital, BOSTON, MASS. Retina Foundation, 30 Chambers St., Boston, Mass. Bids June 7, awarded July 14. CD 6/9, under LB.

▲ **Charles Logue Bldg. Co.,** 71 Needham St., Newton, Mass., CA $1,419,562 Peabody ELEMENTARY SCHOOL, Linnaean Walker and Avon Sts., CAMBRIDGE, MASS. City, Supt. Bldgs., City Hall, Cambridge, Mass. Bids June 10. Awarded July 11. CD 6/14 under LB.

▲ **Tocci Bros. Constr. Co., Inc.,** 38 Colonial Ave., Newton, Mass., CA $1,757,000 SENIOR-JUNIOR HIGH SCHOOL, Church St., CLINTON, MASS. Town, Supt. Schools, Chestnut St., Clinton, Mass. Bids June 29. Awarded July 6. CD 7/6 under LB.

F. L. Collins & Sons, Inc., 408 Academy Bldg., Fall River, Mass., CA $846,921 est. $850,000 HOSPITAL addn., FALL RIVER, MASS. Union Hospital, 538 Prospect St., Fall River, Mass. Bids June 28. Awarded July 6. CD 7/5 under LB.

Singleton Constr. Co., Inc., 390 Pleasant St., Tewksbury, Mass., LB $611,200, JUNIOR HIGH SCHOOL, MANCHESTER, MASS. Town, Supt. Schools, Memorial School, Manchester, Mass. Bids July 14. CD 6/8.

Gilbane Building Co., 90 Calverley St., Providence, R. I., CA approx. $675,000, INFIRMARY and RESIDENT HALL for ELDERLY NUNS, METHUEN, MASS., Sisters of Presentation of Mary, 209 Lawrence St., Methuen, Mass. CD 3/12.

Neri Constr. Co., 131 Main St., Millbury, Mass., LB $812,271, JUNIOR and SENIOR HIGH SCHOOL addns., MILLBURY, MASS. Town Supt. Schools, Memorial High School, Martin St., Millbury, Mass. Bids July 13. CD 7/11.

▲ **Wexler Constr. Co., Inc.,** 118 Needham St., Newton Highlands, Mass., CA $1,032,800, DORMITORY, McAfee Hall Campus, Proj. MASS-19-CH 49 (D), WELLESLEY, MASS. Wellesley College, Wellesley, Mass. Bids June 16. CD 6/20, under LB.

Brown University, Div. Planning Bldgs., Prospect St., Providence, R. I., rejected bids July 13, heavy ENGINEERING LABORATORY, PROVIDENCE, R. I. est. $700,000. CD 7/7.

Beach Park Estates, Inc., 16 High St., Clinton, Conn., Owner Builds, $590,000, 59 HOUSES, Beach Park Estates, Beach Park Rd., CLINTON, CONN. CD 6/17.

Purcell Constr. Co., Inc., 36 George Ave., Norwalk, Conn., Owner Builds, $681,500, 47 HOUSES, Tamarack Park, Traingle St., DANBURY, CONN.

F. D. Rich Co. Inc., 550 Summer St., Stamford, Conn., LB $948,186 2 story, brick, concrete, Smith Houses chronic and convalescent HOSPITAL, Rock Rimmon Rd. Welfare Dpt., Bid No. S 923 STAMFORD, CONN., City, Purchasing Agent, City Hall, Stamford, Conn., Bids July 6. CD 7/1.

▲ **David T. Chase,** 85 King Philip Drive, West Hartford, Conn., CA $1,000,000, 100,000 sq. ft. HEADQUARTERS OFFICE for Department Store Chain and Retail Store, incl. air conditioning, Windsor Ave., WILSON, CONN. Topp's Discount City Department Stores, 3155 Main St., Hartford, Conn. Philip J. DiCorcia, 364 W. Middle Tpk., Manchester, archt. Jacob Koton Assocs., 919 Albany Ave., Hartford, engrs. Awarded July 14.

MIDDLE ATLANTIC

BUILDINGS—BA

N. Y., New York—DORMITORY—BA 8/3—Barnard College, 606 W 120 St., Zone 27, 8 story dormitory, corner Broadway and W. 116 St. $850,000, O'Connor & Kilham, 101 Park Ave., Zone 17, archts. CD 1/12/59.

▲ **Pa., Pen Argyl**—SCHOOL—BA 8/5—Pen Argyl Area Joint School System, high school addn. and athletic area, $1,500,000. Plans deposit $100. Everett Assocs., 512 Hamilton St., Allentown, archts. S. W. Herring, 512 Hamilton St., Allentown, engr. CD 9/14.

▲ **Pa., Doylestown**—COURTHOUSE—BA 8/9—Comrs. Bucks Co., Doylestown, courthouse, $3,000,000. Plans deposit $75. Carroll Grisdale & Van Alen, 6 Penn Center Plaza, Phila., archts. Severud Elstad & Kruger, 415 Lexington Ave., New York, N. Y., engrs. CD 4/28.

HEAVY CONSTRUCTION—LB & CA

NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany,
W. P. Blimm Co., Inc., Lockport, N. Y., CA $515,533, b. conc. 6.46 mi., misc. work 0.03 mi. Sanborn-Pekin SH 740, Sanborn-Lockport SH 909 Shawnee-Cambira, SH 729 Rte. 31 FARC 60-72 Proj. F 709 (8), Niagara Co. Bids June 2. CD 6/8, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,
Glasgow, Inc., Glenside, Pa., CA $2,051,966, dualization 5,737 mi. U.S. Rte. 202, Section 8A, from South Branch of Raritan River to Beechwood Dr., Hunterdon and Somerset Counties, Bids June 1. CD 6/6, under LB.

▲ **NEW JERSEY**—State Hy. Dept., 1035 Parkway Ave., Trenton,
Mal-Bros. Contg. Co., West Caldwell, N. J. CA $1,575,979, overpass bridges at Broad and Grand Aves., culvert, flume, Flat Rock Brook, City of Englewood and Borough of Leonia, Bergen Co. Bids June 9, awarded July 12. CD 6/14, under LB.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 7/13,
The South Jersey Constr. Co., 207 Adams St., Riverside, N. J., LB $537,999 (13 bidders), resurf., wid'n. 5 mi. section Mt. Holly-Burlington Rd., Burlington Co. CD 6/28.

▲ **Horn Constr. Co., Inc.,** 225 W. 34th St., New York 1, N. Y., CA $2,197,600, wharf constr., piers, Berths 52, 54, 56, and 58, Contr. EP-110.003, ELIZABETH, N. J. Port of New York Auth., Room 1100, 111 Eighth Ave., New York 11, N. Y. Bids June 21, awarded July 14. CD 6/23, under LB.

Charles F. Smith, Kennett Square, Pa., CA $852,551 (8 bidders), Contr. 2300-W, water main, John Hanson Hy. to Central Ave., Cheverly, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. Bids July 11. CD 6/24.

BUILDINGS—LB & CA

▲ **Joseph R. Farrell, Inc.,** Conshohocken, Pa., CA $2,000,000, BIOLOGY, PHILA., PA. University of Pennsylvania, 3025 Walnut St., Phila., Pa. CD 1/15/59.

▲ **Marna Development Corp.,** 80 S Ave., New York 11, N. Y., Owner Builds, $1,600,000, 4 story, 71 unit APARTMENT, White Plains Rd., EASTCHESTER, N. Y. Geo. G. Miller, 125 W. 45 St., New York 36, N. Y., archt.

▲ **Starrett Bros. & Eken-Inc.,** 225 Broadway, New York 7, N. Y., CA Est. $2,000,000, INSTITUTE FOR THE HANDICAPPED, NEW YORK, N. Y. The Institute of Crippled & Disabled, 400 Forest Ave., New York, N. Y. Bids June 20, awarded July 12. CD 6/23, under LB.

▲ **Stoffel & Tillotson,** 2043 Eastburn Ave., Phila., Pa., CA $1,000,000, 2 story, 150,000 sq. ft. DEPARTMENT STORE, AUDUBON, N. J. Morris A. Kravitz, 225 S. 15 St., Phila., Pa. Keast & Hood, 1201 Chestnut St., Phila., Pa., engrs. CD 1/14.

▲ **Benjamin Swartz,** 6 Grandview Ave., Fords, N. J. Owner Builds, $1,500,000, sixty HOUSES, East Mountain Rd., HILLSBOROUGH, N. J. Wallace Graves, 409 E. State St., Bound Brook, N. J., engr.

▲ **Irving Bellings,** Trowbridge Rd., Morris Plains, N. J., Owner Builds, $1,250,000, 40 HOUSES, Valley Rd., Bernards Twp., BASKING RIDGE, N. J. Stephen Potter, 410 Colonial Ave., Union, N. J.

Chrysler Constr. Co., Rte. 46, Saddle Brook, N. J., Owner Builds, $800,000, 33 HOUSES, Duncan Rd., HO-HO-KUS, N. J.

▲ **Max Richter,** 647 Park Ave., Paterson, N. J., and **Philip Gerber,** 32 Oxford St., Montclair, N. J., Owners Build, $1,000,000, 55 HOUSES, Hamilton Farm Rd., Hillsborough Twp., SOMERVILLE, N. J.

Irving Bellings, Trowbridge Rd., Morris Plains, N. J., Owner Builds, $500,000, 17 HOUSES, Rosenmilt Pl., MORRISTOWN, N. J. Stephen Potter, 410 Colonial Ave., Union, N. J., archt.

▲ **Donald Aronow,** 647 Mountain Dr., S. Orange, N. J., Owner Builds, Over $1,000,000, 130,000 sq. ft. PLANT, Rte. 27 and How Lane, NEW BRUNSWICK, N. J. Totwein & Blake, 1018 Stuyvesant Ave., Union, N. J., archts.

Homemaster Corp. of New Jersey, 37-04 Broadway, Fairlawn, N. J., Owner Builds, $500,000 (2nd section), 25 HOUSES, Winding Way, RIVER VALE, N. J. Kordys & Oldziey, 1379 Hamburg Turnpike, Wayne, N. J., archts.

Albert Enouraton & Co., Inc., 1748 Prospect St., Trenton, N. J., CA $550,000, 48 unit Garden APARTMENT, White Horse Ave., TRENTON, N. J. Franklyn B. Spiezle, 11 N. Villow St., Trenton, N. J.

John McShain, Inc., 17 and Spring Garden Sts., Phila., Pa., CA $800,000, HOME FOR AGED, DANVILLE, PA. Villa Sacred Heart, Danville, Pa. Henry D. Dagit & Son, 1329 Race St., Phila., Pa., archts., McCormick Taylor Assocs. Suburban Station Bldg., Phila., Pa., engrs.

Hill & Ivins, 150 N. Second St., Chambersburg, Pa., CA $960,503, general contract for SECONDARY HIGH SCHOOL, Southern Huntingdon County Joint School Bd., Proj. 860-621, ORBISONIA, PA. Pa. P. School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids May 25. CD 6/2, under LB.

▲ **Henry A. Knott, Inc.,** 2406 Greenmount Ave., Baltimore 18, Md., LB $1,189,000, (6 bidders), brick, block, concrete, steel ACTIVE TREATMENT BLDG., Spring Grove State Mental Hospital, CATONSVILLE, MD. State Dpt. P. Imprvts., 301 W. Preston St., Baltimore, Md. Bids July 14. CD 1/28.

Caroline Co. Bd. Educ., Denton, Md., rejected bids June 30, South Caroline HIGH SCHOOL, DENTON, MD. LB $837,000. CD 7/7, under LB.

▲ **Altimont Brothers, Inc.,** 4929 Bethesda Ave., Bethesda, Md., LB $1,134,000, SCHOOL SERVICE, Carver High School, ROCKVILLE, MD. Montgomery County Bd. Educ., Rockville, Md. Bids July 15. CD 7/1.

▲ **Frederick G. Krapl & Son,** 421 Orange St., Wilmington, Del., CA $1,000,000, 135,000 sq. ft. WARE-

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

HOUSE, parking center, Office, NEWARK, DEL. Avon Products Inc., 240 Schapl St., Newark, Del. Bids June 22. CD 6/10.

Ernest DiSabatino & Sons, 2601 W. 4 St., Wilmington, Del., LB $900,000, Brown LABORATORY North Wing addn., NEWARK, DEL. University of Delaware, Newark, Del. Bids July 12. CD 6/21.

SOUTH

HEAVY CONSTRUCTION—BA

▲ N. C., Charlotte—BA 8/17—City, City Hall, 3.7 mgd. Sugaw Creek sewage treatment plant addn. $2,000,000. J. N. Pease & Co., 2925 N. Independence Blvd., engrs. CD 2/4.

BUILDINGS—BA

▲ N. C., Greensboro—OFFICE—BA 8/3—Pilot Life Insurance Co., Sedgefield, (selected list of bidders) 5 story, 76,948 sq. ft. office, Sedgefield, $1,500,000. McMinn, Norfleet & Wicker, 2828 Lawndale Ave., archts. CD 9/8.

▲ Fla., Jacksonville—SHOPPING CENTER—BA 8/9—Lake Shore Shopping Center, Inc., Florida Title Bldg., 100,000 sq. ft. shopping center, Wilson Blvd. and Blanding Blvd. $1,000,000. Plans deposit $100. H. Rex Frye, Florida Title Bldg., archt.

▲ Tenn., Hohenwald—PLANT—BA 8/9—Lewis County and City, 165,000 sq. ft. mfg. PLANT, $3,000,000. Lockwood Greene Engineers, 316 Stuart, Boston, Mass., archts. American Biltrite Rubber Co., 22 Willow St., Chelsea, Mass., lessee. CD 7/14.

▲ La., Pointe-a-la-Hache—SCHOOL—BA 8/16—Plaquemine Parish School Bd., Pointe-a-la-Hache, Boothville-Venice high school, Buras. $1,500,000. Plans deposit $100. Dibolls-Kessels & Assn., 737 Pere Antione Alley, New Orleans, La., archts.

BUILDINGS—SLC

Fla., Jacksonville—SHOPPING CENTER—Cowart Bros., Inc., 217 W. Church St., soon lets contract shopping center $650,000. W. Kenyon Drake & Assocs., 237 W. Forsyth St., archts. CD 7/12.

HEAVY CONSTRUCTION—LB & CA

† Loftin-Woodard, P. O. Box 692, Delhi, La., LB $723,421 reservoir clearing, Group 3, Hartwell Dam, Franklin and Stephens Counties Ga., and Oconee Anderson and Pickens Counties, S. C., GEORGIA and SOUTH CAROLINA, U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids July 13. CD 7/6.

▲ FLORIDA—State Rd. Dpt., Tallahassee, J. D. Manly Constr. Co., Box 1099, Leesburg, Fla., CA $1,563,966, c. conc. limerock base with binder course surf. tr. b. conc. surf. course storm sewers, SR 5 (U.S. 1) F 003-6 (13) Job 79010-3278, Volusia Co. Bids Apr. 28, awarded July 15, CD 5/4, under LB.

† McCullough Dredging Co., Box 630, Birmingham, Ala., CA $662,050 Canal 8, Biscayne Canal and structure 28, Central and Southern Flood Control Proj. CIVENG-08-123-60-63. FLORIDA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids June 16, Awarded July 7. CD 6/22 under LB.

▲ KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort, Ky.—Foster & Creighton, 724 First American National Bank Bldg., Nashville, Tenn., CA $2,264,600 c. conc. pavement 2.899 mi. Henderson-Evansville. US1(13) U 526(23) FG 526(16) F 526(14), Henderson Co.

Ky.—Oman Constr. Co., Inc., P. O. Box 146, Nashville, Tenn., CA $1,276,522 high type surf. 1.864 mi. Louisville-Lexington. I 64-2(14) 16 F 552 (3), Jefferson Co. Bids July 1. CD 7/8 under LB.

▲† Grenco Services, Inc., P. O. Box 665, Langley Field, Va., LB $1,319,444, laboratory, tunnel, roads, paving, utilities, Arnold Air Force Station, ENG-40-1126-60-16, TULLAHOMA, TENN. U. S. Eng., Arnold Air Force Station, Tullahoma, Tenn. Bids June 30. CD 6/16.

BUILDINGS—LB & CA

▲ N. C., Monroe Constr. Co., 2710 Martsville Rd., Greensboro, N. C., LB $1,213,870, 100,000 sq. ft. SHOPPING CENTER, GREENSBORO, N. C. Northside Development Corp. of Greensboro, Inc., Piedmont Bldg., Greensboro, N. C. Bids July 15. CD 6/28.

King-Hunter, Inc., 1421 Westover Terrace, Greensboro, N. C., CA $874,068, HOSPITAL addn., LUMBERTON, N. C. Southeastern General Hospital, Lumberton, N. C. Bids June 30. CD 7/7, under LB.

▲ Equitable Constr. Co., Box 181, Rte. 3, Durham, N. C., Day Labor, $1,000,000, 100 RESIDENCES, RALEIGH, N. C.

Fowler-Jones Constr. Co., 10 32nd St. N.W., Winston-Salem, N. C., CA $783,000, ANIMAL CARE HOSPITAL, WINSTON-SALEM, N. C. North Carolina Baptist Hospital, 300 S. Hawthorne Rd., Winston-Salem, N. C. Bids June 14. CD 6/22, under LB.

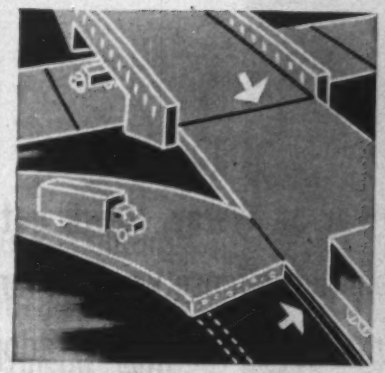
▲ Georgia—Cumberland Conference of Seventh Day Adventists, P.O. Box 4929, Atlanta, Ga., Day Labor, $1,500,000, HIGH SCHOOL, CALHOUN, GA.

Shallowford Apartments, Inc., 3636 Chamblee-Tucker Rd., Chamblee, Ga., Day Labor, $700,000, eighty-five 74,000 sq. ft. APARTMENT UNITS, DECATUR, GA.

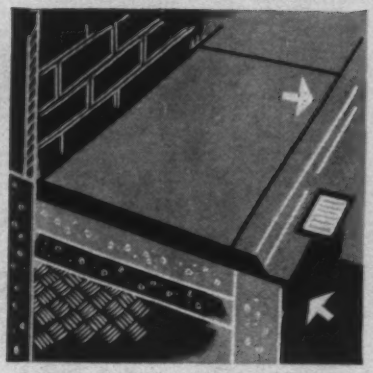
▲ Coweta County Hospital Auth., Newnan, Ga., rejected bids June 24, HOSPITAL, NEWNAN, GA. LB $2,351,000. CD 7/6, under LB.

▲ Mann Constr. Co., P.O. Box 6605, Orlando, Fla., CA $1,100,000, 115,000 sq. ft. SHOPPING CENTER,

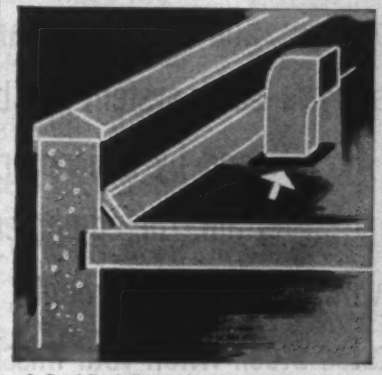
(Continued on page 64)



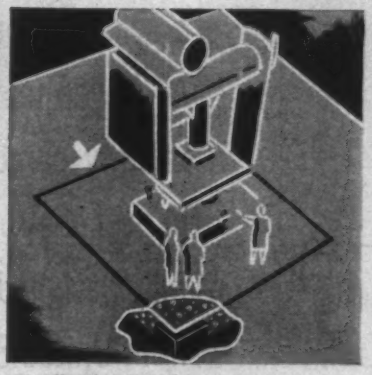
1. **Concrete Expansion Joint Filler:** for bridge approaches, airports, intersections, abutments, highways, dams.



2. **Concrete Expansion Joint Filler:** for walks, curbs, gutters, streets, driveways, slab floors.



3. **Roof Deck Expansion Joint:** forms tight, yet resilient bond at all junctures with gypsum or concrete deck.



4. **Vibration Isolation:** under heavy machinery, minimizes vibration transmission. Tight, flush joints. No maintenance.

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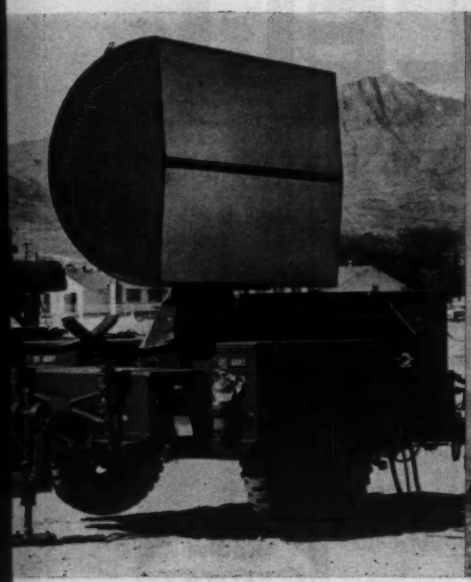
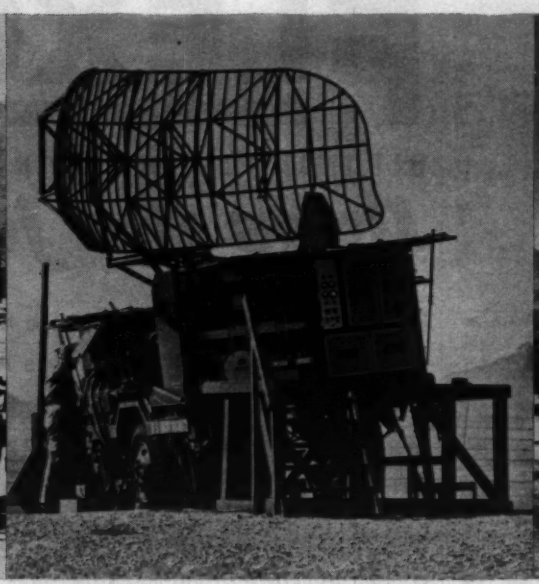
Highway, skyway or byway, Hawk gets there fast—The Army's extremely mobile air defense weapon, for which Raytheon Company is prime contractor, has also been adopted for use by the U. S. Marine Corps. Tree-top attackers are Hawk's special quarry. It uses a solid fuel propellant, and can accompany fast-moving field forces. All eleven units in the Hawk system can be transported by standard military cargo aircraft and by helicopter, rolled over the highways or over the roughest terrain. The equipment is lean and rugged, skillfully designed with carbon, high strength, and alloy steels—available from United States Steel. When your missile support system goes on



This continuous wave acquisition radar picks up targets down to tree-top levels.



The pulse acquisition radar detects high altitude targets and provides volume coverage in support of the continuous wave radar.

Tubular outriggers give the launcher good stability with maximum weight conservation.

the drawing board, get maximum design capabilities from all ground support materials. Consult with the one producer of all these materials. Whether it's carbon steel or special constructional alloy steels, Stainless Steel, electrical cable or wire rope... consult with

United States Steel

USS TRADEMARK

The Loader-transporter has an extremely low silhouette. It weighs only 5,250 pounds.

This mark tells you a product is made of modern, dependable Steel.

(Continued from page 61)

ORLANDO, FLA. Pine Hill Shopping Center, 5137 W. Colonial Dr., Orlando, Fla. Bids July 6. CD 7/13, under LB.

▲ **William A. Berbussee, Jr.**, 322 Royal Palm Way, Palm Beach, Fla., CA $1,142,600, RESIDENCE HALLS, Women's Dormitory, University of Southern Florida, TAMPA, FLA. Florida State Bd. Control, County Courthouse, Tallahassee, Fla. Bids June 29. CD 7/6.

† **Henderson, Black & Green**, P.O. Box 353, Troy, Ala., CA $826,507, two 200-man student DORMITORIES and HEATING PLANT, main post, ENG-01-076-60-65, FORT RUCKER, ALA. U. S. Eng., 2401 Grant St., Mobile, Ala. Bids June 22. CD 7/11.

Rannie Terrall, Box 545, Farmerville, La., LB $674,977 (4 bidders), 2 story, 57,600 sq. ft., rein.-con. frame, masonry, etc. LIBRARY, GRAMBLING, LA. State Bd. Educ., State Capitol, Baton Rouge, La. Bids July 11. CD 6/13.

▲ **Martin Seitlin**, 4301 Lillywood Rd., Nashville, Tenn., Day Labor, $2,800,000, 282 RESIDENCES, NASHVILLE, TENN.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Moline**—PLANTS, ETC.—BA About 10/15—John Deere & Co., 1325 Third Ave., steel, metal, glass plants and administrative offices. $12,000,000. Eero Saarinen & Assocs., 1300 Woodward St., Birmingham, Mich., archts. CD 4/29.

BUILDINGS—BA

▲ **Wis., Milwaukee**—PARKING STRUCTURE—BA 8/10—City, City Hall, 8 story, 180 x 254 ft., parking structure N. 2nd St., $1,634,000. Plans deposit $10. Charles Nagel & Assocs., 1615 Underwood Ave., Wauwatosa, Zone 13, engr. CD 2/4.

▲ **O., Mount St. Joseph**—ADMINISTRATION, etc.—BA 8/16— College of Mount St. Joseph on-the-Ohio, (selected list of bidders), administration, dormitories, faculty, chapel, rectory, swimming pool annex. bldgs. CD 5/10/57.

HEAVY CONSTRUCTION—LB & CA

Penker Constr. Co., Summer St., Cincinnati, O. CA $771,015, Ross Run sewer, Section from Ross Ave. to Expressway, CINCINNATI, O. City, City Hall and Bd. Comrs. Hamilton Co., Courthouse, Cincinnati, O. Bids July 5. Awarded July 12. CD 7/12 under LB.

ILLINOIS—State Dpt. P. Wks. & Bldg., Div. Hys., Centennial Bldgs., Springfield,

E. M. Melahn Constr. Co., C & N W Right of Way, Algonquin, Ill., CA $582,349, c. conc. paving 1.52 mi. FA 20, McHenry Co. Bids July 1. Awarded July 13. CD 7/7 under LB.

▲ **WISCONSIN**—State Hy. Comn., office of Constr. Sect., Rm. 535, State Office Bldg., Madison,

rejected bids July 12, Proj. F 03-2(60), Contract 1, grading, Structures B-44-28, B-44-29, B-44-35 and B-44-36 7.098 mi., Appleton-East County Line Rd., USH 41, Outagamie Co. LB $2,194,859. CD 7/15 under LB.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing,

Mich.—Hertel-Deyo Co., 5205 S. Division Ave. S., Grand Rapids, Mich. and **C. E. Utterback**, Mt. Pleasant, Mich., CA $1,369,937, (5 bidders) 3.3 mi. US 27 freeway from Deerfield Rd. north to and incl. interchange at M-20 east of Mt. Pleasant, Isabella Co.,

Mich.—Hertel-Deyo Co., 5205 S. Division Ave. S., Grand Rapids, Mich., CA $1,280,747, (6 bidders) 1.5 mi. grading, drainage structures, concrete pavement, 2 bridges, US-131, Kent Co.,

Mich.—Mid-America Engr. Corp., 1926 Lake Shore Dr., Muskegon, Mich., CA $548,052 (9 bidders) 13.4 mi. concrete base course w/d'n. US-10, Osceola and Clara Counties,

Mich.—A. Lindberg & Sons, Box 134, Ishpeming, Mich., CA $2,690,460, (7 bidders) 7.9 mi. grading, drainage structures, concrete pavement, 2 bridges, US-27, Isabella Co.,

Mich.—Denton Constr. Co., 20415 Mack Ave., Grosse Pointe Woods, Mich., CA $3,085,348 (5 bidders) 7.2 mi. grading, drainage structures, concrete pavement, 3 bridges, US 27, Isabella Co.,

Mich.—L. W. Edison Co., 3134 Midland Dr., Grand Rapids, Mich., CA $1,174,457 (5 bidders), 4.6 mi. grading drainage structures, concrete pavement, ramps, 2 bridges US 23, Livingston Co. Bids June 22. Awarded July 5. Grand total $10,149,003. CD 6/27 under LB.

BUILDINGS—LB & CA

▲ **Albert M. Higley Co.**, 2936 E. 22 St., Cleveland, 15, O., CA Est. $5,494,770, SCIENCE CENTER, CLEVELAND, O. Western Reserve University, 2040 Adelbert Rd., Cleveland 6, O. Bids July 13. CD 7/12.

▲ **Brown Constr. Co.**, 3334 Prospect Ave., Cleveland 15, O., CA $1,000,000, est. $1,200,000 (10 bidders) 125,000 sq. ft. OFFICE, major appliance WAREHOUSE, CLEVELAND, O. General Electric Co., River Rd., Schenectady, N. Y. Bids June 30. CD 7/5.

▲ **Alger-Rau Assocs., Inc.**, 17024 Miles Ave., Cleveland 28, O., LB $1,569,950, Total Est. $2,161,389, DORMITORY-DINING HALL, Kent State University, KENT, O. Dpt. P. Wks., State Depts. Bldg., Columbus 15, O. Bids July 13. CD 6/24.

Chet Keuper, 425 Lake NE, Massillon, O., Own Forces, $500,000, CANCER RADIATION TREATMENT CENTER, MASSILLON, O. Dr. Kenneth Loeffler, 1300 University Ave., Madison, Wis., lessee. Charles A. Woehrl & Assocs., 411 W. Main St., Madison, Wis., archts.

F. A. Wilhelm Constr. Co. Inc., 3914 Prospect, Indianapolis, Ind., CA $513,688, L-shaped, 135 x 150 ft., 60 DORMITORIES for men, NORTH MANCHESTER, IND. Trustees, Manchester College, North Manchester, Ind. CD 4/28.

James Burton Co., 300 W. Washington Blvd., Chicago 6, Ill. CA $689,000 est. $1,000,000, 3 story ADMINISTRATION bldg., House of Correction, 2800 S. California Ave., CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids May 24. Awarded July 6. CD 6/3 under LB.

▲ **Permanent Constr. Co.**, 2200 N. 3 St., Milwaukee, Wis., CA Est. $1,000,000, 1 story, 180 x 600 ft. POTTERY PLANT ADDN., KOHLER, WIS. Kohler Co., Kohler, Wis.

▲ **Walsh Constr. Co.**, 3710 S. Western Ave., Chicago, Ill., CA $904,648, general contract CHEMISTRY, MADISON, WIS. University of Wis., Madison, Wis. Bids May 19. CD 6/1 under LB.

C. A. Hopper Co., 2030 Pennsylvania Ave., Madison, Wis. CA $580,922, heating, ventilating, air-conditioning contract for chemistry (Madison, Wis.).

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **Oklahoma**—BA 8/9—U. S. Eng., Box 61, Tulsa, Zone 2, relocating US Hy. 69, MKT Railroad-Bridges, Section II, Eufaula Reservoir, CIVENG-34-066-61-1, $1,500,000. CD 6/8 under LB.

† **Missouri**—BA 8/24—U. S. Eng., 420 Locust St., St. Louis, Zone 2, Prairie Ferry Pumping Stations, Ferry Pond Pumping Station and sewer alterations, Proj. Items P.5 and P-6, Flood Protection, St. Louis, CIVENG 23-065-61-3. $900,000. CD 7/8. under LB.

▲† **Colorado**—BA 8/30—Bureau Reclamation, Dpt. Interior, Paonia, Crawford Dam, near Hotchkiss, Smith Fork Participating Project, Colorado River Storage Project, DC 5367. CD 9/15.

BUILDINGS—BA

▲ **Neb., Lincoln**—HOSPITAL ADDN.—BA 8/2—Byran Hospital Bd. Dirs., 4848 Summer St., 3 story, bsmnt., 1 story wing Bryan Hospital; 3 story, bsmnt. nurses home. Extended date. $2,800,000. Davis & Wilson, 226 Stuart Bldg., Lincoln, Neb., archts.-engrs. CD 6/27.

Tex., Houston—CHURCH—BA 8/4—Central Presbyterian Church, USA, 5213 Montrose Blvd., church, $700,000. Extended date. Wilson, Morris, Crain & Anderson, 3330 Graustark Ave., archts. Robert J. Cummins, Bankers Mortgage Bldg., and Cooke & Holle, 1951 Richmond Ave., engrs. CD 7/8.

▲ **Tex., San Antonio**—COUNTY JAIL—BA 8/5—Bexar Co., Comrs. Court, Courthouse, county jail, $3,500,000. Plans deposit $200. Weidner & Walther, Alamo National Bldg., archts. Beretta, Greenslade & Assocs., Inc., 1927 N. St. Marys St., and Reynolds & Morgan, Insurance Bldg., both of San Antonio, engrs. CD 10/8.

▲ **Tex., Houston**—POST OFFICE—BA 8/16—General Services Admin., U. S. Post Office Dpt., 1114 Commerce St., Dallas, main post office $5,000,000-$10,000,000. Wilson, Morris, Crain & Anderson, 3330 Graustark St., Houston, archts. Dale S. Cooper & Assocs., 420 Sul Ross Ave., Walter P. Moore, 2 Pinedale St., John G. Turney, 2502 S. MacGregor St., Houston, engrs. CD 5/21.

Tex., Houston—PLANT—Bids Asked—International Minerals & Chemical Corp., 5401 Old Orchard St., Skokie, Ill., Barite processing plant, $600,000. CD 7/12.

BUILDINGS—SLC

▲ **Iowa, Burlington**—HOSPITAL—Burlington Protestant Hospital soon lets contract 6 story, rein.-con. hospital imprv. $1,341,000. Dane D. Morgan & Assocs., 314 N. 4 St., archts. CD 12/2.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., Capitol Approach, St. Paul, Bids opened July 15,

Minn.—Minnesota Valley Imprvt. Co., Montevideo, Minn., LB $270,625, (3 bidders), grading, base, plant mixed bit. surf., fencing, 3.9 mi., Chippewa Co.;

Minn.—Sheehy Bridge Constr. Co., 1255 Larpenteur Ave. W., St. Paul, Minn., LB $311,209, (5 bidders), grading, bridge, Bridge No. 9611, etc., Hennepin Co.;

Minn.—McLean-Astleford Co., 7701 Harriet Ave., Minneapolis, Minn., LB $357,217, (7 bidders), grading, gravel base, plant mixed bit. surf., bridge, Hennepin Co.;

Minn.—Asbach Constr. Co., 1910 W. County Rd. C, St. Paul, Minn., LB $264,532, (4 bidders), grading, gravel base, c. conc. base, 0.7 mi., in Duluth, St. Louis Co.;

Minn.—Brown & Leguil, Rte. 1, Mankato, Minn., LB $895,166, (4 bidders), grading, gravel base, road mixed bit. base, Bridge. St. Louis Co.;

Minn.—H. W. Nelson, P. O. Box 272, Lake Park, Minn., LB $168,502, grading, 10.4 mi., TH 113, Maintenance Dist. 6, St. Paul Co.;

Minn.—McGarry Bros., 437 33rd Ave. N, St. Cloud, Minn., LB $939,437, (10 bidders), grading, gravel base, road mixed bit. base, plant mixed bit. surf., bridge, Sherburne Co. CD 6/30.

▲ **MISSOURI**—State Hy Dpt., Jefferson City,

Fred Weber Contr. Inc., 7929 Alabama Ave., St. Louis 11, Mo., CA $1,766,527, graded earth, culverts 1.81 mi. St. Louis Co.; CA $1,228,112, graded earth, 1.32 mi., St. Louis City; CA $2,320,575, graded earth, culverts, 3.087 mi., St. Louis Co. Bids June 23. Awarded June 27. Grand total $5,315,214. CD 6/30, under LB.

▲ **Gunnison Contractors, Inc.**, P. O. Box 1679, Wichita, Kan., CA $2,430,343 Interceptor Sewer 2177-B, OMAHA, NEB. City, City Hall, Omaha, Neb. Bids June 7 CD 7/15 under LB.

KANSAS—State Hy. Comn., Salina,

Russell Ralph Co., Inc., Box 799, Topeka, Kan., CA $631,062, grading 4.532 mi. SP 70-85-I 70 4 (3) 251 Pt. II, Saline Co. CD 7/11, under LB.

▲ **Heldenfels Brothers, Inc., P. O. Box 1917**, Corpus Christi, Tex. LB $1,442,330 (10 bidders) 57,000 lin. ft. 24 to 48-in. water lines, CORPUS CHRISTI, TEX. City of Corpus Christi, City Hall, Corpus Christi, Tex. Reagan & McCaughan, Wilson Blvd., Corpus Christi, Tex., engrs. Bids July 13. CD 7/12.

E. H. Reeder, 2128 Hawes St., Dallas, Tex., CA Bid 1, $980,526, 72 in. concrete water main, DALLAS, TEX., City, City Hall, Dallas, Tex. Bids June 27, CD 6/20;

† **C. H. Leavell & Co.**, 1900 Wyoming St., El Paso, Tex., CA $531,000, range facilities, Fort Bliss, ENG-29-005-60-07, EL PASO, TEX. U. S. Eng., P. O. Box 1538 Albuquerque, N. M. Bids June 24. CD 5/27.

COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver,

Schmidt Constr. Co., Arvada, Colo., CA $556,969 (7 bidders) grading, stabilization, structures and plant mixed asph. surf. 4.912 mi. Colorado Proj. No. F 019-1 (9) Mesa Co. Bids July 13, Awarded. CD 6/29.

COLORADO—State Hy. Dpt., 4201 E. Arkansas, Denver,

Kilgroe Constr. Co., 7991 West 6 Ave., Lakewood, Colo. CA $970,193 (6 bidders) grading structures and concrete pavement 0.843 mi. Colo. Proj. No. I-25-3 (14) 215 near Denver, Adams Co. Awarded July 12, CD 6/29.

Brodie Constr. Co., 764 N. Grand St., Amarilo, Tex., CA $648,000, 36 mi. pipe line Artesia to Walker Air Force Base, Roswell, NEW MEXICO. Aztec Pipeline Co., subsidiary Continental Oil Co., 1623 E. 6 St., Dallas, Tex. CD 7/22/59, under Texas and New Mexico.

BUILDINGS—LB & CA

▲ **State Dpt. Admin.**, 19 State Capitol, St. Paul, Minn., rejected bids July 8 general contract, ventilating and refrigeration, plumbing and heating, excav. for site work, etc., electrical work YOUTH CENTER incl. Administration Bldg., Service Bldg., nine Cottages, etc. CIRCLE PINES, MINN. LB $2,959,300 general CD 7/13 under LB; LB $444,000 excav., site work. LB $863,400 plumbing, heating, ventilating, LB $434,829 electrical work LB $711,476 plumbing and heating. Will re-advertise. CD 7/15 under LB.

▲ **State Dpt. of Admin.**, Procurement Div., 19 State Capitol, St. Paul, Minn., rejected bids June 30 SCIENCE and INDUSTRIAL ARTS BLDG. Moorhead State College, MOORHEAD, MINN. LB $1,379,000 CD 7/7 under LB.

Associated Builders, Inc., 621 Ninth St. N., Virginia, Minn., CA $634,253 Sub-District HEADQUARTERS, Minnesota Dpt. Hys., St. Paul, VIRGINIA, MINN. State Dpt. of Admin., 19 State Capitol, St. Paul, Minn. Bids June 23 CD 6/29, under LB.

Egan & Sons Co., 2400 W. Broadway, Minneapolis, Minn., CA $921,457 mechanical work, HOSPITAL, WINONA, MINN. Community Memorial Hospital, Winona, Minn. Bids May 17 CD 6/6 under LB.

Ernest J. Ward, Inc., P. O. Box 152, Benton, Ill., CA $528,200, 50,000 sq. ft. ELEMENTARY and Peake HIGH SCHOOL with auditorium, ARKADELPHIA, ARK. Arkadelphia School Dist., Arkadelphia, Ark., Bids June 24. CD 7/5.

Parsons Constr. Co., 2512 Deer Park Rd., Omaha, Neb., LB $733,300 general contract 4 story BUSINESS ADMIN., OMAHA, NEB. Creighton University, 2500 California St., Omaha, Neb. Bids July 13. CD 8/4.

P. G. Bell & Co., P. O. Box 13196, Houston, Tex., LB $745,000, HIGH SCHOOL, BEAUMONT, TEX. Catholic Diocese of Galveston, 1411 Sealy St., Galveston, Tex. Bids July 1. CD 12/11.

Cain & Cain, 4001 S. Expressway, Fort Worth, Tex., CA $530,995, 3 story masonry HOSPITAL addn., CLEBURNE, TEX. Johnson Co. Courthouse, Cleburne, Tex., Bids June 8, CD 6/20 under LB.

Earl T. Mizell, Contractor, 3914 Frontier Lane, Dallas, Tex., Owner Builds, $829,675, 61 DWELLINGS, DUNCANVILLE, TEX. CD 7/5.

▲ **Bellamah Homes, Inc.**, 5725 Sage St., El Paso, Tex. Owner Builds, $1,707,975, 154 DWELLINGS, EL PASO, TEX. CD 6/16.

▲ **Robert E. McKee, General Contractor Inc.**, P. O. Box 562, El Paso, Tex., CA $1,217,000, CLASSROOMS, Texas Western College, EL PASO, TEX. Texas State University, Austin, Tex. Bids June 21. CD 7/6 under LB.

▲ **Thomas S. Byrne, Inc.**, 1307 Ft. Worth National Bldg., Fort Worth, Tex., CA est. $1,000,000, remodeling administration bldg. into CLASSROOM, FORT WORTH, TEX. Texas Christian University, Campus, Fort Worth, Tex. CD 1/22.

Laughin & Silver, 1502 Centerville Rd., Dallas, Owner Builds, $823,445, 65 DWELLINGS, off Plano Rd., GARLAND, TEX. CD 7/11.

▲ **W. R. Grimshaw Constr. Co.**, P. O. Box 22486, Houston, Tex., CA $2,096,000. SHOPPING CENTER, HOUSTON, TEX. Syndicated Properties, Inc., 1801 Main St., Houston, Tex. Bids June 23. CD 7/14, under LB.

▲ **Carrousel Motor Hotel**, Holmes Road, Houston, Tex. Owner Builds, $1,200,000, phase 1, MOTOR HOTEL,

Holmes Road, near Gulfgate, HOUSTON, TEX. CD 11/2/59.

▲ **Bert R. Coats,** Contractor-Developer, 4010 Bluebonnet St., Houston, Tex. Owner Builds, $3,149,250, 71 DWELLINGS, HOUSTON, TEX.

▲ **Wm. L. Cook, Jr., Builder,** 5105 Guifton St., Houston, Owner Builds, $1,550,000, twenty APARTMENTS, HOUSTON, TEX. Lawrence Starnes, 2317 Bissonner St., Houston, archt. CD 7/8.

King & Sheets Corp., 5111 Buffalo Speedway, Houston, Tex. Owner Builds, $874,333, forty-one DWELLINGS, Tanglewilde addn., HOUSTON, TEX. CD 6/16.

▲ **James E. McDaniels and Frank Thielen, Contractors,** 9507 Braeburn Glen, Houston, Tex. Owner Builds, $1,193,360, 84 DWELLINGS, Sheldon Rd. and Hy-90, HOUSTON, TEX. CD 5/10.

▲ **Wm. Rozelle,** 4035 Grapevine Rd., Houston, Tex, CA $1,283,412, 90 DWELLINGS in WOODFOREST Subdivision, HOUSTON, TEX. Lakewood Building Co., 4034 Grapevine Rd., Houston, Tex.

▲ **Deutsch Enterprises, Geo. C. Deutsch, Developer-Builders,** Denton, Tex., Owner Builds, $1,142,375, 80 DWELLINGS, utilities, water, sewer, site work, streets, off US EXPRESSWAY 77, LAKE CITY, TEX.

Martin Brothers, P. O. Box 14305, San Antonio, Tex., CA $558,000. Pat M. Neff JUNIOR HIGH SCHOOL, SAN ANTONIO, TEX. Northside Ind. School Dist., Bandera Rd., San Antonio, Tex. Marmon & Mok, 905 National Bank Commerce Bldg., San Antonio, Tex., archts. Bids June 21. CD 7/11, under LB.

▲ **Baxter Constr. Co.,** P. O. Box 7744, Houston, Tex., CA $1,423,500, John Foster Dulles HIGH SCHOOL, STAFFORD, TEX. Fort Bend Ind. School Dist., Stafford, Tex. Bids July 1. CD 7/8.

Leighland Constr. Co., South of Great Falls, Great Falls, Mont., CA $808,700, 4 story, bsmnt. LIBRARY, BOZEMAN, MONT. State Bd. Educ., Helena, Mont. Bids July 12. CD 7/5.

▲ **Mead & Mount Constr. Co.,** 1560 Denver Club Bldg., Denver, Co., CA $1,777,000, 3 story, 90x215 ft. GARAGE AND WAREHOUSE. 3 story bsmnt, 50,000 sq. ft. COMMERCE AND INDUSTRY, LARAMIE, WYO. University of Wyoming, Campus, Laramie, Wyo., Bids July 8. Awarded July 11. CD 6/16/60.

Robert A. Fender, Box 1748, Grand Junction, Colo., CA $538,466 1 story, 54,000 sq. ft. Junior High SCHOOL, MONTROSE, COLO., School Dist. No. 1, S. Cascade Ave. and S. Third, Montrose, Colo. Bids June 22 CD 6/28 under LB.

F. R. Orr Constr. Co., 4414 Vine, Denver, Colo., LB $527,223 (5 bidders) 52 unit 6 story 48 x 134 ft. APARTMENT, South Josephine and Buchtel Blvd. DENVER, COLO., Bisierge Corp., 1050 Littleton Blvd., Littleton, Colo. Bids July 6, CD 6/22.

FAR WEST

BUILDINGS—BA

▲ **Wash., Seattle**—OFFICE—BA 8/7—Office of J. Graham & Co., archts.-engrs., 1426 5th Ave., Zone 1, 2 story, 171 x 254 ft. office, Meridian Ave. and N. 103rd St., for Allstate Insurance Co., 221 N. LaSalle St. $1,000,000. CD 9/24.

▲† **Calif., Martinez**—HOSPITAL—BA 10/11—Veterans Admin., Vermont Ave. between H and I Sts. S.W., Wash. 25, D. C., Veterans Admin. Hospital, $11,774,000. CD 1/10/59.

HEAVY CONSTRUCTION—LB & CA

▲ **Peter Kiewit Sons Co.,** Box 848, Fairbanks, Alaska, LB $1,239,572 est. $1,654,455 (4 bidders) Stage 3 paving, lighting marking, turfing, Fairbanks International Airport. Proj. 9-50-001-03, FAIRBANKS, ALASKA. State Dpt. P. Wks., State Office Bldg., Juneau, Alaska. Bids July 14 CD 6/23.

▲ **WASHINGTON**—State Hy. Comn., Olympia, **Manson Constr. & Eng. Co.,** 5209 E. Marginal Way, Seattle 4, Wash., CA $1,525,380, placing 65,000 tons riprap, rein.-con. piers for bridge over Columbia River, Vantage, Grand and Kittitas Counties. Bids July 12, awarded July 13. CD 7/15, under LB.

† **Eugene Luhr & Co.,** P.O. Box 48, Columbia, Ill., CA $916,845, Middle Creek and drainage slough levee Clear Lake to Bloody Island pump and upstream proj. modifications, Spec. 2666, ENG-04-167-60-43, Lake Co., CALIFORNIA. U. S. Eng., 1209 B St., Sacramento, Calif. Bids July 7, awarded July 12. CD 7/13, under LB.

† **Hitachi Inc. New York Ltd.,** 501 5th Ave., New York, N. Y., LB $722,450 (5 bidders), two 105,000 hp vertical shaft, 225 rpm hydraulic turbines, Spring Creek power plant, Central Valley Proj., DS 5346, Redding, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids July 14. CD 5/26.

▲ **Chas. J. Rounds Co.,** 16510 E. Gladstone Ave., Azusa, Calif., CA $1,191,433 constr. Bell Creek and Calabasas Creek, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids July 1 CD 6/6.

▲ **R. R. Hensler Inc.,** 7550 Wheatland Ave., Sun Valley, Calif., CA $2,489,653 Schedule A, Part I, harbor development, REDONDO BEACH, CALIF. City, City Hall, Redondo Beach, Calif. Koebig & Koebig, 3242 W. 8 St., Los Angeles, Calif., engrs. Bids Apr. 4 Awarded July 12 CD 4/8 under LB.

L. C. Smith Co., P.O. Box 610, San Mateo, Calif., LB $355,043 (6 bidders), runway extension, pavement reconstr., grading, surf., etc., Contr. 265, SAN FRANCISCO, CALIF. City and County of San Francisco P. Utilities Comn., City Hall, San Francisco, Calif. CD 11/9/56.

HEAVY CONSTRUCTION—LB & CA

Conningham Constr. Co., 1808 S. Catalina Ave., Redondo Beach, Calif., Owner Builds, $818,500, 65 DWELLINGS Sherman Way, Cantlay St., Wyandotte St., Leadwell St., Tract 25447, CANOGA PARK, CALIF.

▲ **Stolte, Inc. and Daniels & House Constr. Co.,** 8451 San Leandro St., Oakland, Calif., LB $1,956,000 (6 bidders), 2 story, 70,000 sq. ft. rein.-con. HOSPITAL, CARMEL, CALIF. Peninsula Community Hospital, chr. Bldg. Comm., c/o Edward D. Stone, archt., 350 Waverly St., Palo Alto, Calif., Bids July 12 CD 6/2.

▲ **Tophigh Constr. Co. & Robert Bryant,** P.O. Box 618, Mt. Shasta, Calif., CA Approx. $1,000,000, 1st stage, frame, masonry, stone Shasta Royal Inn HOTEL, 400 car parking, swimming pool, DUNSMUIR, CALIF. Royal Hotels, Inc., 821 Market St., San Francisco, Calif. Kal H. Porter, 3850 Middlefield Rd., Palo Alto, Calif., archt. Bids July 13. CD 7/11.

Basin Builders Corp., 3371½ Washington St., Venice, Calif., CA $600,000, 2 frame 158x253 ft, 45 unit APARTMENT, 4030-4050 Grandview Blvd., E. Ocean Park Tract, LOS ANGELES, CALIF. Earl Lachman, 3371½ Washington St., Venice, Calif.

Joe Engle, 12435 Oxnard St., North Hollywood, Calif., CA $579,200, 29 stucco DWELLINGS, Reseda Blvd., Canby Ave., Germain St., Tract 23916, NORTHRIDGE, CALIF. Galaxy Development Co., 12435 Oxnard St., North Hollywood, Calif. Emery Kanarik, 8320 Melrose Ave., Los Angeles, Calif., archt.

▲ **Greenhills Development Co.,** Box 1217 Perry Annex, Whittier, Calif., Owner Builds, $1,276,800, 85 DWELLINGS, Glazebrook, Clear Springs and Lawnhill Drs., Tract 24512, NORWALK, CALIF.

South Bay Union High School Dist., 207 N. Francis Ave., Redondo Beach, Calif., rejected bids June 23, AUDITORIUM, Mira Costa High School, Manhattan Beach, REDONDO, CALIF. LB $829,230. CD 7/5, under LB.

G. E. Krumvieda, 10838 Nance, Norwalk, Calif., CA $600,000, 32,350 sq. ft., masonry BOWLING ALLEY and RESTAURANT, 1499 E. Highland, Orange Grove Tract, SAN BERNARDINO, CALIF. Bob Arrowood & Al Shaheen, 1499 Highland (E), San Bernardino, Calif.

Sayar Inc., 16901 S. Western Ave., Gardena, Calif., Owner Builds, $724,500, 69 DWELLINGS, Cataract Ave., Eleva St., Drifton Ave., W. Nubia St., Shilmar Ave., Commercial St., Tract 21368, SAN DIMAS, CALIF.

▲ **Del E. Webb,** 5101 W. San Fernando Rd., Los Angeles 39, Calif., CA $4,500,000, 107x218 ft. BREWERY addn., 15800 Roscoe Blvd., Tract 1000, SAN FERNANDO, CALIF. Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis 18, Mo. CD 3/1.

Herbert Goldsworthy, Box 710, Santa Monica, Calif., CA $733,365, 30,000 sq. ft. south HIGH SCHOOL addn., TORRANCE, CALIF. Torrance Unified School Dist., 2335 Plaza Del Amo, Torrance, Calif. Bids June 3. CD 6/13, under LB.

CANADA

HEAVY CONSTRUCTION—BA

▲ **N. B., Moncton**—WAREHOUSE AND OFFICE—BA 7/25—Hinde & Dauch Paper Co. of Canada Ltd., 43 Hanna St., Toronto, Ont. (selected list of bidders) 75,000 sq. ft. steel frame, brick, block warehouse, air-conditioned office, $2,000,000. Sproatt & Rolph, 85 Cumberland St., Toronto, Ont., archts. Foundation of Canada Engineering Corp., Ltd., 8 Spadina Rd., Toronto, Ont., engrs.

▲ **Saskatchewan**—BA 7/26—Saskatchewan Power Corp., 1739 Cornwall St., Regina, power plant, penstocks and intake structure, Squaw Rapids Hydroelectric station about 30 mi. northeast Carrol River. Plans deposit $100. Crippen Wright Engineering Ltd., 207 W. Hastings St., Vancouver, B. C., engrs. CD 9/8.

Ont., Toronto—BA 8/22—Twp. Etobicoke, 550 Burnhamthorpe Rd., grade separation between Islington Ave. and C.P.R. right-of-way, Cordova Ave. (Contract 60-21). $700,000.

BUILDINGS—BA

Ont., Bowmanville—HOSPITAL—BA 8/16—Bd. Directors Memorial Hospital, Bowmanville, (selected list of bidders), hospital extension, $950,000. Govan, Ferguson, Lindsay, Kaminker, Langley & Keenleyside, 10 Price St., Toronto, archts. CD 2/9.

BUILDINGS—SLC

▲ **Ont., Hamilton**—PLANT EXPANSION—International Harvester Co. of Canada Ltd., 208 Hillyard St., soon lets contract 200,000 sq. ft. industrial plant expansion, N. E. corner Burlington and Wilcox Sts. $8,500,000 (equipped). CD 6/20.

HEAVY CONSTRUCTION—LB & CA

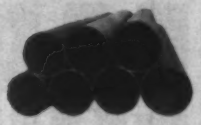
▲ **ALBERTA**—Alberta Govt., Parliament Bldgs., Edmonton,

Alta.—Poole Engineering (1958) Ltd., 10505 109th St. Edmonton, Alta., CA $682,251, grading, grade separation bridge structures, gravel base course, other work

(Continued on page 68)

POSEY WORKS FOR BETTER—

LARGE O.D. STEEL PIPE



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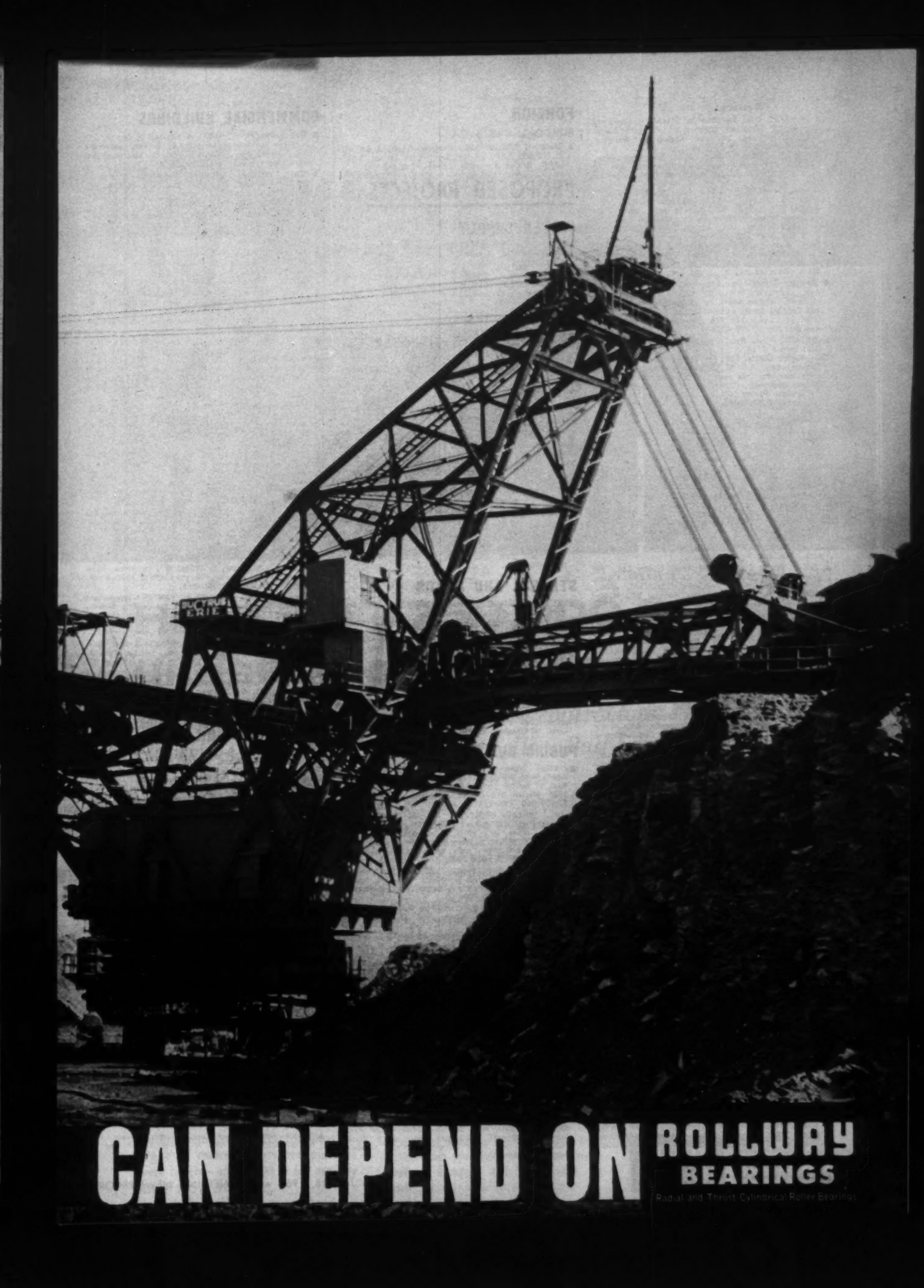
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Radial and Thrust Cylindrical Roller Bearings

(Continued from page 65)

5 mi. Hy. 2 from Edmonton to St. Albert. Awarded July 6; LB $208,389, asph. plant mix surf. course abt. 14 mi. Hy. 28 from Radway to Warspite. Awarded July 5.

Alta.—**W. F. Botkin Constr. Ltd.**, Edmonton, Alta., CA $117,209, asph. plant mix surf. course, abt. 16 mi. Hy. 12 from east of Halkirk to Fleet. Awarded July 6.

Alta.—**New West Constr. Co. Ltd.**, 10480 113th St., Edmonton, Alta., CA $246,146, double asph. surf. treatments, abt. 20 mi. Hy. 36 from North Saskatchewan River to St. Brides. Awarded July 5.

Alta.—**Nodwell Bros. Ltd.**, 324 36th Ave. N., Calgary, Alta., CA $523,118, grading, grade separation structures, gravel base course, asphaltic plant mix surf. course, other work Hy. 16 from interchange at junction of Hys. Nos. 16 and 16A to Jasper Place, Jasper Place. Awarded July 6. Grand Total $1,777,113.

▲ **Banister Constr. Co., Ltd.**, 625 Northern Hardware Bldg., Edmonton, Alta., CA $2,225,000, 50 mi. 40 to 26 in. laterals addns. to natural gas lines, Sedalia and Cessford areas, ALBERTA, The Alberta Gas Trunk Line Co., Ltd., 320 9th Ave. SW, Calgary, Alta. Awarded July 5. CD 4/13.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Downsview, Bids opened 7/13,

Ont.—**Rayner Constr. Ltd.**, 29 Commercial Rd., Leaside, Toronto, Ont., LB $1,267,216, granular base, concrete base, hot mix paving 4 bridges, retaining wall, Ottawa Queensway, (Contract 60-139) Ottawa.

Ont.—**Brennan Paving Co., Ltd.**, 400 Gage St. N, Hamilton, Ont., LB $547,817, granular base, hot mix paving 5.44 mi. Hy. 401 from Hy. 28 to Hy. 45 Interchange, (Contract 60-92) Port Hope. CD 6/20.

▲ **Banister Constr. Ltd.**, 625 Northern Hardware Bldg., Edmonton, Alta., CA $2,000,000, natural gas pipelines, distribution systems, transmission line from Yorkton to Canora to Kamsack and from Tisdale to Nipawin and lateral lines, distribution systems at Nipawin, Canora and Kamsack, SASKATCHEWAN. Saskatchewan Power Corp., 1739 Cornwall St., Regina, Sask. Bids Apr. 5, awarded July 5. CD 3/31.

BUILDINGS—LB & CA

▲ **Burns & Dutton Concrete & Constr. Co. Ltd.**, P. O. Box 636, Edmonton, Alta., CA $1,657,000, structural steel, rein.-con. COURT HOUSE, CALGARY, ALTA. Alberta Dpt. P. Wks., Parliament Bldgs., Edmonton, Alta. Bids July 7. CD 6/16.

▲ **College Bridge Co. Ltd.** and **Abbey Landry Ltd.**, 10 Release Centre, Halifax, N. S., CA $1,789,239 (7 bidders), 7 story, brick, rein.-conc. HOSPITAL addn., MONCTON, N. B. Moncton City Hospital Bd., Moncton, N. B. Bids June 21, awarded July 7.

▲ **Len Ariss & Co., Ltd.**, 150 Surrey St. E., Guelph, Ont. LB $1,348,000, (14 bidders), 40,000 sq. ft. rein.-con., brick GIRLS TRAINING SCHOOL, LINDSAY, ONT. Dpt. P. Wks., Rm. 6630, East Block, Parliament Bldgs., Toronto, Ont. Bids July 13. CD 6/17.

Ascon Constr. Ltd., 871 Ottawa St., Windsor, Ont., CA $990 000, Metropolitan HOME FOR AGED, WINDSOR, ONT. Windsor Metropolitan Committee, City, City Hall, Windsor, Ont. Bids June 22, awarded July 12. CD 7/12 under LB.

▲ **Eastern Constr. Co., Ltd.**, Box 96, Walkerville, Ont. CA Est. $1,200,000, (6 bidders), STUDENT CENTRE, WINDSOR, ONT. Assumption University, 400 Huron Line Rd., Windsor, Ont. Pennington & Carter, Morris Block, Windsor, Ont., archts.

Isack Constr. Co., Ltd., 3310 Riverside Dr., Riverside, Ont., CA $688,616, Phase 1, Federal-Provincial Proj., ROW HOUSING, northeast corner University Ave. and McDougall St., WINDSOR, ONT. Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, Ont. and Ontario Dpt. Planning & Development, Parliament Bldgs., Toronto, Ont. Bids May 10. CD 6/7, under LB.

▲ **Ain & Zakuta Ltd.**, 6910 Wiseman Ave., Montreal, Que., CA Est. $1,500,000, 14 story, 150x56x140 ft., concrete, brick, stone, rein.-con. APARTMENT, Sherbrooke St. W., MONTREAL, QUE. Rembrandt Realty Co., Ltd., 1410 Stanley St., Montreal, Que. Bids June 18. CD 6/17.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—LB & CA

† **W. B. Uhlhorn**, P. O. Box 2028, Harlingen, Tex. U.S.A., CA $783,400 international flight service station, Albrook Field. IFB 2-60-284, BALBOA, CANAL ZONE. Federal Aviation Agency, 2 Regional Office, Procurement Branch, Fort Worth, Tex. U.S.A. Bids June 27 CD 7/6 under LB.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Henry C. Beck Co.**, 205 Worth Ave., Palm Beach, Fla., U.S.A., CA $1,690,000, 28 unit Blue Vista APARTMENTS, West Bay St., NASSAU, BAHAMAS, Blue Bay Developments, Inc., Butler Sands Bldg., Bay and East Sts., Nassau, Bahamas. Bids June 2. CD 6/14, under LB.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Berlanti Overseas Corp.**, 15 Oakland Ave., Harrison, N. Y. and **Constructora Mendoza, C. A.**, Caracas, Venezuela CA est. $63,000,000, 3,053 HOUSES, 1500 in Cauacas Area, Venezuelan Armed Fords, Ipsfan, CARACAS, VENEZUELA. Instituto de Provision Social de las Fuergas Armadas Nationale, Caracas. Venezuela.

FOREIGN

BUILDINGS—LB & CA

▲ **Dunas & Whitson Ltd.**, Glasgow, Scotland CA est. $5,200,000 NATO oil fuel depot, Lock Striven, SCOTLAND. British Admiralty, London, England

PROPOSED PROJECTS

WATER SUPPLY

▲ **Calif., San Marcos**—San Marcos Co. Water Dist., water facilities expansion, will vote Sept. 13 on bond issue, $1,250,000.

Va., **Covington**—Alleghany Co., Bd. Supervisors, Covington, $650,000 bond election date extended to Aug 2, water line imprvs. Mallow, Altamont, Pinehurst, Wrightston area, $115,000; water line imprvs., Iron Gates area, $100,000; water line imprvs., Cliftondale, Selma Area., $94,000. CD 3/25.

SEWERS, WASTE DISPOSAL

▲ **Calif., Turlock**—City, P. O. Box 526, Turlock, trunk sewer line, sewage treatment plant addns., $1,100,000. Constr. in 1961. CD 9/24/52.

▲ **Ill., Downers Grove**—Village, Village Hall, 5156 Main St., St. Joseph Creek and Montgomery Ave. storm sewer imprvts., $2,260,000. Stanley Engineering Co., Hershey Bldg., Muscatine, Iowa, consult. engr. CD 10/13.

▲ **Mass., Boston**—Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., sewage treatment plant, sedimentation and digestion sections administration bldg., Deer Island, $20,000,000. Greeley & Hanson, Wabash Ave., Chicago, Ill., engrs. CD 1/10/52.

▲ **O., Dayton**—Bd. Comrs. Montgomery Co., Courthouse, Stillwater sewer to serve 10,000 acres, Randolph, Harrison, Butler Twps., $2,940,000. Ralph L. Woolpert Co., 360 W. 1st St., consult. engrs. CD 2/11/59.

▲ **O., Dayton**—Bd. Comrs. Montgomery Co., Courthouse, incinerators, over $1,000,000. Robert H. Steelwagen, 629 Buhl Bldg., Detroit, Mich., consult. engr. CD 8/14/58.

STREETS AND ROADS

▲ **NEW MEXICO**—State Hy. Comm., State Hy. Dpt. Bldg., Cerrillos Rd., Santa Fe,

Bernalillo Co.—0.738 mi. East-West Coronado Freeway, Albuquerque, $1,403,150.

Sandoval Co.—1½ mi. frontage roads on NM-422, Interstate 25. Bernalillo, $102,000. To go ahead 1960.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

Westchester Co.—widn. and straightening Cedar St. (Rte. 1), New Rochelle. $1,400,000.

▲ **OHIO**—Ohio Highway Dpt., State Depts. Bldg., Columbus, Zone 15,

Franklin Co.—relocating Rte. 33 between Columbus and Canal Winchester, $5,000,000. Constr. 1962.

PUBLIC BUILDINGS

▲† **Colo., Denver**—SUPPLY DEPOT—General Services Admin., 19 and F Sts., N.W., Wash., D. C., plans by Paul R. Reddy, 105 Filmore St. and Ken R. White, 1567 Marion St., Denver, government supply depot. $7,207,000. CD 2/4.

▲ **Ind., Westville**—HOSPITAL ADDNS.—State Mental Health Div., 1315 W. 10 St., Indianapolis, Beatty Hospital addns. incl. Phase 1, teen-age patient bldg., $1,500,000; Phase 1, intensive treatment wings addn. to hospital and admin. bldg., and present bldgs. addns. and extensions, $1,000,000.

▲ **La., Morgan City**—TURBO-ELECTRIC PLANT—City Council, City Hall, plans by Albert Switzer & Assoc., 4529 N. Blvd., Baton Rouge, turbo-electric generating plant, 6,250 KW, $1,200,000.

▲ **N. Y., Corfu**—SCHOOL—Corfu-East Pembroke Central School Dist., defeated bonds June 27 junior-senior high school. $1,608,000.

▲ **N. Y., Mohegan Lake**—SCHOOL ADDNS.—Bd. Educ., Central School Dist. 1, plans by Reginald E. Marsh, 101 Park Ave., New York, Zone 17, and Abrams & Moses, 2 Hamilton Ave., New Rochelle, Washington and Jefferson school addns., Lakeland, $1,050,000. Bids in Aug. Seelye Stevenson Value & Knecht, 101 Park Ave., New York, Zone 17, structural engrs.

▲ **N. Y., Smithtown**—SCHOOL—Bd. Educ., Central School Dist. 1, 26 Oak Ave., plans by Ketchum & Sharp, 227 E. 44 St., New York, Zone 17, New York Ave. Junior High School, $1,500,000, Tectonic Assoc., U. S. Hy. 206, Somerville, N. J., mech. engr. Severud, Elstad & Krueger, 415 Lexington Ave., New York, Zone 17, structural engrs.

▲ **Tex., Nederland**—SCHOOL—Nederland Independent School Dist., Nederland, voted bonds, June 11, high school, $1,000,000. Herbert Voelcker & Assocs., 1202 Dennis Ave., Houston, archt.-engrs. CD 6/3.

▲ **Alta., Edmonton**—HOSPITAL—Dpt. National Health & Welfare, Indian and Northern Health Div., Parliament Bldg., Edmonton, Charles Camsell Hospital, $3,000,000. Rule, Wynn & Rule, 11422, Jasper Ave., John A. MacDonald, 833 Tegler Bldg., and B. Wood, 10627 146th St., all of Edmonton, archts., to study needs for addnl. bldg.

COMMERCIAL BUILDINGS

▲ **Ga., Gainesville**—CHURCH—First Baptist Church, 105 S. Green St., Gainesville, plans by Bothwell and Nash, 206 Roswell St., Marietta, church sanctuary and educational building. $1,000,000.

▲ **Mass., Westbury**—SHOPPING CENTER—Owner, c/o William Riseman & Assoc., archts., 561 Boylston St., Boston, Mass., 2nd Section, shopping center, Veterans Foreign Wars Parkway, $3,400,000.

▲ **N. J., Dumont**—APARTMENT—Dumont Lowden, Inc., c/o Theo Boswell, 370 S. Washington Ave., Bergenfield, garden apartment, Garden Ave. and Wareham Rd., $3,000,000.

▲ **N. J., Englewood Cliffs**—OFFICE—Thos. J. Lipton, Inc., 1500 Hudson St., Hoboken, plans by Eggers & Higgins, 100 E. 42 St., New York, N. Y., office, Rte. 9W, $1,000,000. Constr. this year.

▲ **N. J., Jersey City**—APARTMENTS—Taylor International, Inc., 420 Lexington Ave., New York, N. Y., plans by John H. Graham, 2000 K St. N.W., Wash., D. C., 2 apartment bldgs. adjoining Gregory Park, $4,000,000-$5,000,000.

▲ **N. Y., New York**—OFFICES, etc.—Charles B. Moss & Assoc., 701 7 Ave., New York, Zone 36, plans for office bldg. by H. J. Feldman, 415 Lexington Ave., New York, Zone 17, and plans for theatre by John J. McNamara, 701 7 Ave., New York, Zone 36, 20 story offices, apartments and theater, N.E. corner 3 Ave. and E. 58 St., $7,000,000.

▲ **N. C., Asheville**—SHOPPING CENTER—R. L. Coleman & Co., P.O. Box 1636, plans by Lyles, Bissett, Carlisle & Wolff, 1800 Gervais St., Columbia, S. C., 250,000 sq. ft. Parkway Plaza shopping center. $2,000,000.

▲ **O., Wickliffe**—COMMERCIAL AND APARTMENT—Ridge Hills Development Co., c/o Karl Kammer, 1101 Leader Bldg., Cleveland, Zone 14, 1,000,000 sq. ft. retail bldgs., thirty-five 400-suite apartments, motel, satellite facilities, bowling lanes, skating rink, medical bldg., $30,000,000. Constr. Spring 1961.

▲ **Tenn., Bristol**—HOSPITAL—Bristol Memorial Hospital, Midway St., Bristol, plans by C. B. Kearfoot, 112 Piedmont St., Bristol, Va., hospital addn. $1,200,000. Appalachian Consulting Engineers, 214 Commerce, Kingsport, engrs.

▲ **Tex., Houston**—OFFICE—Southwestern Savings Assn., 3401 Main St., plans by Wilson & Zimmerman, 1116 Hawthorne St., Houston, 18 story office, 3300 Block, Main St., $4,000,000. CD 7/5.

▲ **Tex., San Antonio**—SHOPPING CENTER—Wonderland Regional Shopping Center, 42 Lakeside St., Denver, Zone 12, Colo., 500,000 sq. ft. masonry shopping center, paved parking, site work off Loop 13, $5,255,000.

▲ **Wash., Seattle**—STUDENT HOUSING—Seattle University, Broadway and Madison Sts., Seattle, Zone 2, student housing, $2,000,000. CD 11/14/57.

▲ **Ont., Hamilton**—SHOPPING CENTRE AND OFFICE—Terminal Towers (Hamilton) Ltd., c/o Lowe & Hoyt, 36 James St. S., shopping centre and office, King, Main and Catharine Sts., $20,000,000. CD 12/2, under Syd.-Co. Holdings Ltd., c/o Elder Mines Ltd., 347 Bay St., Toronto, Ont., as owner.

INDUSTRIAL BUILDINGS

▲ **Conn., Cheshire**—PLANT ADDITION—Waterbury-Farrell Foundry & Machine Co., 453 Bank St., Waterbury, plans by Westcott & Mapes, 109 Church St., New Haven, 216,000 sq. ft. plant addn. $1,000,000. CD 9/28/59.

▲ **O., Powhatan Point**—PLANT—North American Coal Corp., 128 Shaker Blvd., Cleveland, Zone 20, high-purity aluminum sulfate from coal mine waste plant, $1,000,000. Plant design by Theodore J. Kauffeld, 150 Broadway, New York, N. Y., consult. engr. David Gordon & Co., 83 Hickory Grove, Larchmont, N. Y., consult. engrs. (Correction—consult. engr.). CD 6/21.

▲ **Tenn., Morristown**—MANUFACTURING PLANT—Kem-Flake Corp., Morristown, plans by Good & Goodstein Assocs., 305 Magnolia Ave., Knoxville, Flake Board Mfg. plant. $1,000,000.

▲ **Tenn., Nashville**—PLANT ADDITION—Western Electric Co., 195 Broadway, New York, N. Y., plans by Lockwood Greene Engineers, 41 E. 42 St., New York, N. Y., 125,000 sq. ft. manufacturing plant addn. $1,800,000. CD 5/3.

▲ **Tex., Brownsville**—PLANT—Union Carbide Corp., Seadrift, Tex., carbide plant. $2,750,000.

▲ **N. B., Moncton**—PLANT—Moncton Utility Gas Co., propane air plant, Gunningsville area, $2,500,000.

AMERICANS ABROAD

▲ **Greece, Itea**—ALUMINA PLANT—Consortium (J. Lewis Reynolds of Reynolds Metals Co., 19 E. 47 St., New York 17, N. Y., U. S. A., Pechiney of France, Stavros Niarchos of Greece), alumina plant for processing bauxite ore near proposed Aluminum Reduction Plant. $19,000,000.

▲ **Greece, Itea** — PLANT — Consortium (Pechiney of France, J. Lewis Reynolds of Reynolds Metals Co., 19 E. 47 St., New York 17, N. Y., U. S. A., Stavros Niarchos of Greece) aluminum reduction plant. $75,000,000.

FOREIGN

▲ **Greece**—Public Power Corp., Athens, Greece, two hydroelectric plants one at Preventia and one at Kastraki, on Acheloos River. $31,000,000.

Huge job ($750,000,000)... unusual rock-loaders

Michigans do so well handling rock, contractors (Merritt-Chapman-Scott, Gull-DeFelice, Balf-Savin-Winkelman) have eight at work, six more on order

You are looking at one of the biggest construction jobs in the world today: the $750 million Niagara Power Project. The construction firms are Merritt-Chapman & Scott and two joint venturers, Balf-Savin-Winkelman and Gull-DeFelice. Their present work: two four-mile-long conduits from above Niagara Falls to a reservoir and 1,950,000 kw generating plant below the Falls. A tremendous task! Over 16,500,000 cubic yards of excavation, mostly through Lockport dolomite. Cuts 46 ft wide, 64 to 120 ft deep. Total bid price of $136 million. A fantastic variety of work conditions, as evidenced by the wide range of per-yard bid prices: from 30 cents *to more than $45 a yard!* And almost all the specialized rock loading handled by Tractor Shovels. Eight of them when these pictures were taken—*all 17,000 lb lift capacity Model 175A Michigans.*

Load rock into skip pans

A typical Michigan assignment consists of loading newly-shot dolomite from the deeper cuts into excavator-handled skip pans. One Model 175A, lowered into the cut by the huge dragline it then served, was timed loading the 2700 lb/yd broken material at the rate of 11 yds every 4 minutes . . . including time to back away from the toe, turn, and travel 50 to 100 ft to the skip pan.

Take over normal hand-labor task: cleaning rock floors

Another common Michigan job is "sweeping" the rock-cut floors—making them, as one contractor says, "as clean as your kitchen table" before concrete is poured. Here, the Model 175A's load out the last foot or two of shot rock. Material is collected into spoil piles for later truck loading, heaped into skip pans, or loaded direct into hauling units.

In 9 months, 3600 work hours

Two of the three contractors are thus using their Michigans two 10-hour shifts a day. Indicative of their operating hours are engine hour-meter readings taken at random. One machine, for instance, delivered nine months before these pictures were taken, registered 3,679 hours. The other, six months on the job, had rolled up 2,409 hours.

Is it any wonder, with performance like this, that all eight Tractor Shovels on this big job are Michigans? Or that six more Tractor Shovels are on order . . . these too, all Michigans?

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

August 2 Massachusetts

BUILDINGS—BA

▲ **Mass., Everett**—CITY HALL—BA 8/12—City, City Hall, $1,350,000. Extended date. Harold M. Turiello, 1025 Revere Beach Parkway, Revere, archt. CD 6/29.

▲ **R. I., Kingston**—DORMITORY—BA 8/12—State R. I. & Prov. Plants, Div. Purchase, State House, Providence, men's dormitory and dining hall, University of Rhode Island, Bid 67, Proj. RI 37 CH 10. $1,000,000. Plans deposit $100. Fraser & Henthorne, 49 Westminster St., Providence, archts. CD 11/11/58.

Conn., New Haven—COURTHOUSE ALTERATIONS—BA 8/15—City, Purch. Agt., 200 Orange St., county courthouse alterations, renovation, 169 Church St. Plans deposit $100. Carl R. Blanchard, Jr., 111 Whitney Ave., archt.

Conn., Stepney Depot—SCHOOL—BA 9/1—Town of Monroe, Bd. Educ., R.F.D. No. 1, 1 story, steel frame, concrete, elementary school, Old Newtown Rd. $500,000. Nichols & Butterfield, 998 Farmington Ave., West Hartford, archts. Marchant & Minges, 1007 Farmington Ave., West Hartford, engrs. CD 11/24.

BUILDINGS—SLC

Me., Portland—Y.W.C.A.—BA 7/29—Young Women's Christian Assn., 120 Free St., Portland, Me., soon lets contract Y.W.C.A., Spring St., $500,000. Wadsworth & Boston, 57 Exchange St., archts. CD 7/12.

HEAVY CONSTRUCTION—LB & CA

† **Seaboard Engineering Co., Inc.**, 65 Commercial St., South Portland, Me., CA $566,974 est. $517,230 FD radar facilities, Bucks Harbor Air Force Station. ENG 19-016-60-81, BUCKS HARBOR, ME. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids June 28. Awarded July 6. CD 7/5 under LB.

▲ **NEW HAMPSHIRE**—State Dpt. P. Wks. & Hys., Concord, Bids opened July 14.

N. H.—**The Pallazzi Corp.**, P. O. Box 244, Concord, N. H., LB $1,038,939, (4 bidders), hot b. conc. pavement 1.013 mi., 173 ft., 3 span and 300 ft., 5 span cont. steel beam bridges, Hillsboro Co.;

N. H.—**Ralph W. Payne**, Wood St., Keene, N. H., LB $386,956, (6 bidders), 1.631 mi. hot b. conc. roadway 194 ft. rein.-con. slab on T beam bridge, Cheshire Co. CD 7/7.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened July 19,

Bayer & Mingolla Constr. Co., Inc., Box 991, Worcester, Mass., LB $2,734,496, est. $3,343,178, highway and bridge 1-495-6 (16) 57, Littleton and Westford. CD 6/29.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened July 19,

M. A. Gamino Constr. Co., 728 Valley St., Providence, R. I., LB $2,133,828, est. $2,313,088, Rte. 95 I-95-1 (7) 4, Section Interstate Rte. 95, Attleboro and North Attleboro. Bids July 19. CD 7/15.

BUILDINGS—LB & CA

S. & A. Constr. Co., Inc., 330 Rutherford Ave., Charlestown, Mass., CA $700,000, Southgate SHOPPING CENTER, Rte. 3A and Sohier St., COHASSET, MASS. Owner, c/o contractor.

J. L. Marshall & Sons, Inc., 560 York Ave., Pawtucket, R. I., CA $500,000, WAREHOUSE, Neponset Ave., FOXBORO, MASS. The Foxboro Co., Neponset Ave., Foxboro, Mass. Korslund LeNormand & Quann, Inc., 506 Washington St., Norwood, Mass., archts.

Herbert Engineering, Inc., 151 Main St., Worcester, Mass., CA Approx. $450,000, BOWLADROME, Oak St., SHREWSBURY, MASS. New England Commercial Development, Inc., Judge Harry Jackway, 365 Main St., Kensington, Conn. Robinson Engineering, Inc., 311 Main St., Worcester, Mass., engr.

N. D. C. Constr. Co., Inc., Industrial Center, Natick, Mass., CA $828,711, REGIONAL HIGH SCHOOL, SUDBURY, MASS. Lincoln-Sudbury Bldg. Comn., Supt. Schools, Lincoln, Mass. Bids June 24. CD 7/1, under LB.

▲ **E. Tureon Constr. Co., Inc.**, 42 Weybosset St., Providence, R. I., LB $1,888,890, Dexter Manor HOUSING for ELDERLY, PROVIDENCE, R. I., City Housing Auth., City Hall, Providence, R. I. Bids July 19. CD 6/21.

Housatonic Development Co., 2744 Main St., Stratford, Conn., Owner Builds, $450,000, 45 HOUSES, Fair Haven Park, Jennings Rd., FAIRFIELD, CONN. Fuller & Co. Inc., 1301 Wood Ave., Bridgeport, Conn., engrs.

Capitol Realty, 4267 Main St., Bridgeport, Conn., Owner Builds, $799,500, 50 DWELLINGS, "Twin Brook Park," Capitol Lane, MONROE, CONN. CD 7/11.

S. J. Contg. Corp., 2742 Main St., Stratford, Conn., CA $840,050, 7 garden type APARTMENTS, "Elm St. Gardens," S. Elm St., WALLINGFORD, CONN. Elm St. Gardens, S. Elm St., Wallingford, Conn. Ryder, Struppmann & Neumann, 90-04 161 St., Jamaica, N. Y., archts.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 2 Maryland

STREETS AND ROADS

August 2 Maryland August 4 New Jersey

BUILDINGS—BA

▲ **N. Y., East Islip**—SCHOOL—BA 8/8—Bd. Educ., Union Free School Dist. 3, Senior High School, $2,700,000. Plans deposit $50. Jagow & Heidelberger, 658 Fulton Ave., Hempstead, archts.

Pa., Pottstown—SYNAGOGUE—Bids Asked—Sabatino & Fishman, archts., 116 S. 19th St., Phila., synagogue, for Congregation Mercy & Truth Synagogue, 41 High St. $500,000, Daniel Koffler & Assocs., New Castle, Del., engrs.

BUILDINGS—SLC

▲ **Md., Baltimore**—STOCK HOUSE—Theodore Hamm Brewing Co., 1101 S. Conkling St., soon lets contract stock house $2,000,000. Walter Kidde Constructors, 140 Cedar St., New York, N. Y., archts.-engrs. CD 7/15.

HEAVY CONSTRUCTION—LB & CA

Peckham Road Corp., 50 Haarlem Ave., Mt. Vernon, N. Y., CA $483,832, Contr. 1144, reconstr. 0.68 mi. North St., County Rd. 30, Bryant Ave. to Ridgeway, WHITE PLAINS, N. Y. Dpt. P. Wks., Westchester Co., Room 508, County Office Bldg., White Plains, N. Y. Bids June 15. CD 6/13.

Myers & Quigg, Inc., 91 O St. S.E., Wash., D. C., CA $694,672, (1) repairing asph. pavements, concrete bases First Fall Asphalt Repair, 1960, WASH., D. C. D. C. Govt., Dpt. Highways, 499 Pa. Ave. N.W., Wash., D. C. Bids June 17. CD 6/16;

Corson & Gruman Co., 33 and K Sts. N.W., Wash. 7, D. C., LB $97,762, (2) b. conc. covering various roadways (Third Spring Covering Contract) (Wash., D. C.).

BUILDINGS—LB & CA

▲ **Brown-Turner, Inc.**, 205 E. 42 St., New York, N. Y., CA $1,750,000, 6 story APARTMENT, FAR ROCKAWAY, N. Y. Laurence Arms, Inc., 205 E. 42 St., New York, N. Y. Joseph M. Berlinger, 17 E. 49 St., New York, N. Y., archt.

Archdiocesan Bldg. Comn., 451 Madison Ave., New York 22, N. Y., rejected bids Apr. 28, Philomena CHAPEL and AUDITORIUM, KINGSTON, N. Y. $450,000. Dreyer & Clark, 85 Market St., Poughkeepsie, N. Y., archts. CD 4/14.

▲ **Triton Constr. Corp.**, 140-40 Queens Blvd., Jamaica, N. Y., LB $1,423,500, (14 bidders), general contract for HOUSING ADDN., Bronx House of Detention for Men, 653 River Ave., Bronx Boro, NEW YORK, N. Y. Dpt. P. Wks., Rm. 2211, Municipal Bldg., New York 7, N. Y. Bids July 6. CD 6/7.

▲ **Fischer-Malik, Inc.**, 11 Moffitt Blvd., Bay Shore, N. Y., LB $2,383,779, (11 bidders), general contract, "G" DORMITORY, State University College, Long Island, STONY BROOK, N. Y. Dormitory Auth. of State of New York, Normanshill Blvd., Elsmere, N. Y. Bids July 19. CD 7/13.

▲ **Bernard Helderman**, 8 Devonshire Rd., Livingston, N. J., Owner Builds, $3,000,000, 160 HOUSES, Etheridge Dr., CARTERET, N. J. Irwin Gerber, 11 Commerce St., Newark, N. J., archt.

Iorio Constr. Co., 110 Halsted St., East Orange, N. J., Owner Builds, $550,000, 4 story OFFICE, 160 Halsted St., EAST ORANGE, N. J. Engineers, Inc., 487 Orange St., Newark, N. J., engr.

▲ **Tibbetts Constr. Corp.**, 1 Lawton St., Yonkers, N. Y., CA $1,200,000, SHOPPING CENTER, Bergen Blvd., FAIRVIEW, N. J. Boulevard Fairview Properties, Inc., 2900 Blvd., Jersey City, N. J. Peter Butler, 172 State St., West Englewood, N. J., archt. CD 6/22.

▲ **Jean Cheelima**, 419 Essex St., Hackensack, N. J., Owner Builds, $3,000,000, 90 HOUSES, Mountain Knolls, off Rte. 202, OAKLAND, N. J.

Pine Cliff Homes, Irene Court, Demerest, N. J., Owner Builds, $450,000, 14 HOUSES, Fairview Ave., PARAMUS, N. J. Martin Gebhardt & DiPaola, 201 Broad Ave., Fairview, N. J., archts.

Beechwood Realty Co., Inc., 285 E. Merrick Rd., Valley Stream, N. Y., Separate Contracts, $400,000, 62 unit APARTMENT, Beechwood Ave., TRENTON, N. J. Samuel Paul & Seymour Jarmul, 8951 164 St., Jamaica, N. Y., archts. Abraham Hertzberg & Cantor, 207 E. 37 St., New York, N. Y., engrs.

▲ **M. Buckman**, 3517 Cottman St., Phila., Pa., CA Est. $1,250,000, BOWLING LANES and RESTAURANT, BRISTOL, PA. Paradise Lanes, Inc., c/o Bornfriend & Krasnoff, archts., 1515 Walnut St., Phila., Pa. Bids May 31. CD 5/25.

Valley Gardens, Inc., 800 W. Main St., Lansdale, Pa., CA Over $400,000, RESIDENTIAL DEVELOPMENT, Indian Creek Rd., HARLEYSVILLE, PA. Samuel E. Freedman, Lewis Tower Bldg., Phila., Pa.

General State Auth., 18 and Herr Sts., Harrisburg, Pa., rejected bids June 29, SCIENCE HALL, Kutztown State College, KUTZTOWN, PA. LB $434,300. CD 7/5, under LB.

▲ **Frank A. D'Lauro**, 218 E. Willow Grove Ave., Phila., Pa., LB $400,000, CHAPEL, MERION, PA. Sisters of Mercy, 515 Montgomery Ave., Phila., Pa. Nolen & Swinburne, 1601 Locust St., Phila., Pa., archts. Allabach & Rennis, 16 S. Broad St., Phila., Pa., engrs.

Barry Louis, Bethayres, Pa., CA $860,000, RESIDENTIAL DEVELOPMENT, 86 dwellings, London Rd. area, PHILA., PA. Sidney Feinstein, Bethayres, Pa.

David Warren Constr. Co., 370 Montgomery Ave., Merion, Pa., Separate Contracts, $410,000, RESIDENTIAL DEVELOPMENT (41), Kent Lane, PHILA., PA.

Huntingdon Acres, Inc., 1848 Berger St., Phila., Pa., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, Ardwood and other streets, PHILA., PA. Sherwin Rochlis, 1315 Walnut St., Phila., Pa., archt.

A. P. Orleans Constr. Corp., 100 W. Rockland St., Phila., Pa., Separate Contracts, $400,000. RESIDENTIAL DEVELOPMENT, Delman St. area, PHILA., PA.

Welsh Grant, 2700 Knox Rd., Phila., Pa., Separate Contracts, $420,000, RESIDENTIAL DEVELOPMENT (35), Rising Sun Ave., etc., PHILA., PA. L. J. Cowan, 1505 Pine St., Phila., Pa., archt.

Edward J. O'Brien, Jr., 101 Hunter Rd., Plymouth Meeting, Pa., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, Plymouth Rd., PLYMOUTH MEETING, PA.

J. S. Mozino & Co., 423 Burmont Rd., Drexel Hill, Pa., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT (10), Boxwood Rd., etc., RADNOR, PA.

Albert Levin, 144 Garrett Rd., Upper Darby, Pa., Separate Contracts, $400,000, APARTMENT, Lancaster Ave., WAYNE, PA. Aaron Culish, 117 S. 17 St., Phila., Pa., archt.

Horches Corp., c/o Bouches Corp., 8650 Loch Raven Blvd., Towson 4, Md., CA $592,000, 3 story glass and Aluminum MOTEL, Loch Raven Blvd. near Joppa Rd., TOWSON, MD. Bouches Corp., 8650 Loch Raven Blvd., Towson 4, Md.

▲ **Henry C. Beck Co.**, 55 Marietta St. N.W., Atlanta, Ga., CA $1,500,000, battery FACTORY, MIDDLETOWN, DEL. Globe Union Inc., 900 E. Keefe Ave., Milwaukee, Wis. Robert Strass, Inc., 2344 N. Oakland Ave., Milwaukee, Wis., engr. CD 6/6.

▲ **Alfred J. Vilone, Jr.**, 2213 Concord Ave., Wilmington, Del., Separate Contracts, $1,250,000, RESIDENTIAL DEVELOPMENT (130), White Clay Creek Hundred, WILMINGTON, DEL.

SOUTH

BUILDINGS—BA

Ga., Augusta—SCHOOL—BA 8/11—Richmond Co. Bd. Educ., Heard and Heckle Sts., 42,000 sq. ft. trade school, Lumpkin Rd. $500,000. Plans deposit $50. R. Stan Woodhurt & Gilbert J. O'Brien, 515 15th St., archts. CD 8/6.

Ky., Corbin—HOSPITAL ADDN.—BA 8/23—City, City Hall, Corbin, Southern Baptist Hospital alterations, addns. Over $500,000. Plans deposit $50. Extended date. Sullivan & Isaacs & Sullivan & Assocs., 1800 Reading Rd., Cincinnati, O., archts. CD 7/14.

Ky., Henderson—BOWLING ALLEY—Bids Asked—Eastgate Bowl, 2530 Fryer Dr., 1 story, approx. 20,000 sq. ft., 20 lane, brick bowling alley. $500,000. Plans deposit $25. David H. Pritchett & Assoc., Madisonville, engrs. Morris Tarrants & Assoc., 229 N. Elm, archts. CD 1/26.

HEAVY CONSTRUCTION—LB & CA

FLORIDA—State Rd. Dpt., Room 228, Holland Bldg., Tallahassee,

W & M Constr. Co., Williston, Fla., CA $605,130, grading, 4-lane 8½ in. limerock base Type 1B concrete surf. course with binder incl. Type 1-B surf. tr. 3 in. thickness 2.4 mi. SR 20, State Proj. Job No. 26020-3502, Alachua Co. Bids June 9, awarded July 15. CD 7/1, under LB.

▲ **FLORIDA**—State Rd. Dpt., Tallahassee,

Reed Constr. Corp., 1345 20 St., Miami Beach, Zone 39, Fla., CA $3,143,125, grading, 2-lane 4-lane limerock base 2, 3, 4 and 8-lane divided limerock base, b. conc. surf. with binder course, incl. Type 1-B surf. treatment 0.741 mi. State Proj. Job No. 8790-3508, State Rte. 25, LeJune Rd., Interchanges Miami area, Dade Co. Bids June 28, awarded July 19. CD 7/1 under LB.

Latex Constr. Co. of Georgia, 4959 S. Peachtree Rd., Atlanta, Ga., CA $500,000 replacing 4 in. gas line between Helena and Montgomery, ALABAMA, Plantation Pipeline Co., 161 Spring St. Bldg., Atlanta, Ga.

Preston Carroll Constr. Co., P. O. Box 158, Clifton, Tenn., LB $486,071, est. $564,491, (7 bidders), 14 mi. outfall sewer lines South Huntsville, HUNTSVILLE, ALA. City, City Hall, Huntsville, Ala. Bids July 14. CD 6/9.

▲ **Clark Brothers Co.**, Box 1949, Jackson, Miss., CA $1,670,459, Project 2, runway pavement 150x7400 ft., parallel and connecting taxiways, aprons, JACK-

(Continued on page 72)

Today: *4 Michigan Dozers for this major Midwest contractor.* Tomorrow: *15*

Each replaces 2 crawlers, 1 roller

At first glance, this *looks* like a typical big-job spread of equipment. Twenty tractors. Fifteen self-propelled scrapers. Sixty dump trucks. But then you look again. Four of the tractors are on rubber. All Michigans.

"And come back in a few years," says the contractor, Chelsea Utterback, Mt. Pleasant, Michigan, "and *almost all* our tractors on the grade will be rubber-tired Michigans!"

The reasons are pretty obvious. The Michigan units are *fast*—dozing and push-loading at speeds up to 6 mph, running job-to-job at speeds up to 28 mph. *They're economical*—on the basis of Utterback's experience, tires outlast tracks in sand "at least 6 to 1." *They help compaction.* And Michigans come in a *range of sizes* to match the workload. Utterback Construction Company owns 162 and 262 hp units; 375 and 600 hp models are also available.

Speedy 262 hp unit also increases push-loading output

Utterback's 262 hp Model 280 often handles push-loading of 18-yd scrapers. Load time in typical sandy material averages 40 seconds. Load size averages 13 to 15 pay yds. "Overall scraper cycle time is further reduced," says Mr. Utterback, "by the Michigan's ability to quickly boost each pan out of the pit —and by its high-speed return. On cycles of 1000 to 2000 ft, we actually get an *extra load per scraper per hour!*"

Another major production advantage can be noted on the fill. Here, a Model 280 and two Model 180 Michigans spread 14,000 to 18,000 pay yards of sand and clay per day. Their dozing speed averages 7 to 12 mph. Moreover, compaction after the several passes necessary for normal dozing often reaches 98% (Proctor). "*On many jobs, each Michigan Tractor Dozer thus turns loose from fill assignment two crawlers and a roller,*" reports Mr. Utterback.

Job-to-job at 28 mph

On the contract shown—9 miles of four-lane bypass superhighway around Midland, Michigan—the Model 180 Tractor Dozers are being used alternately on two widely-separated fill sections. Self-powered truck-like speed saves valuable time. The machines also backfill drainage structures and handle finish-grading.

"By working a 162 hp Model 180 *two hours* overtime on backfilling, we accomplish work *it would take a crawler all day to do,*" the contractor states.

Overtime replaces double-shifting

In addition to observing all the standard rules for construction equipment servicing, Chelsea Utterback has a notable one of his own. Each machine is assigned an individual operator, and when double-shift operation ordinarily would be required, that operator stays with his machine for a limited number of overtime hours. Mr. Utterback is convinced by his production records that his system pays off.

He's equally convinced, from the same records, that so far as Dozers are concerned, dependable Michigans pay off "most of all."

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CLARK EQUIPMENT COMPANY
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ECONOMICAL

. . . form round concrete columns faster, easier, and for less cost

Because they are low in cost, save labor, and speed projects to completion, SONOTUBE Fibre Forms offer the fastest, most economical forming method for round columns of concrete.

Highly adaptable on the job, SONOTUBE Fibre Forms can be sawed for tie-in with walls and beams, punched for anchor bolts or dowel rods, and cut for utility outlets. And, because these forms provide a self-cure for concrete, columns formed with SONOTUBE Fibre Forms require no curing compounds or expensive curing treatments.

Used wherever there are round concrete columns to be formed, lightweight Sonoco SONOTUBE Fibre Forms place and brace easier, pour and strip quicker, and save both time and labor while cutting overall construction costs.

There's a type to meet any job requirement . . . in sizes 2" to 48" I.D. Order in specified lengths or standard 18' shipping lengths.

Job illustrated: St. Louis Avenue Underpass, Mark Twain Expressway, St. Louis, Mo., Contractor: Fred Weber Contractor, Inc., Designer: Missouri State Highway Department, Rex M. Whitton, Chief Highway Engineer; J. A. Williams, Bridge Engineer, Consulting Engineers: Sverdrup & Parcel Engineering Co.

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(Continued from page 70)

SON, MISS. Jackson Municipal Airport Comn., City Hall, Jackson, Miss. Bids June 29, awarded July 15. CD 7/13, under LB.

▲ **M & L Constr. Co.**, P. O. Box 95, Kaplan, La., CA $563,500, Division A, East Sewage Treatment Plant, LAFAYETTE, LA. City of Lafayette, City Hall, Lafayette, La. Fromherz Eng., 816 Howard Ave., New Orleans, La., engrs. Bids May 31, CD 6/8, under LB; **George Consolidated**, P. O. Box 8305, Houston, Tex., CA $469,007, Division B, Northeast Interceptor, (Lafayette, La.). Bids May 31. CD 6/27, under LB.

▲† **J. W. Bateson Co.**, 10130 Monroe Dr., Dallas, Tex. LB $2,414,000, est. $2,561,000, (12 bidders), aviation facilities, FORT CAMPBELL, KY. U. S. Eng., P. O. Box 1070, Nashville, Zone 2, Tenn. Bids July 20. CD 7/13, under Public Buildings.

▲† **English Electric Co.**, London, England, LB $1,730,070, (5 bidders), two 49,700 h.p. hydraulic turbines, Melton Hill Dam, Clinch River, Oak Ridge, TENNESSEE. Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn.

BUILDINGS—LB & CA

E. C. Nuckols & Anchor Constr. Co., Bon Air, Va., CA $479,837, addns. to J. G. Hening, Union Grove, Hickory Hill, G. H. Reid, Southampton SCHOOLS, CHESTERFIELD, VA. Chesterfield Co. School Bd., Chesterfield, Va. Bids June 27. CD 6/2.

George W. Kane, 231 S. Garnett St., Henderson, N. C., CA $691,419, 160,000 sq. ft. TOBACCO PROCESSING PLANT, HENDERSON, N. C. J. P. Taylor Tobacco Co., 201 S. 3rd St., Richmond, Va. Bids June 28. CD 7/6, under LB.

Spong Constr. Co., P. O. Box 5436, Columbia, S. C., CA $545,345, 69,900 sq. ft. Fairwold JUNIOR HIGH SCHOOL, COLUMBIA, S. C. City, Bd. Educ., 1311 Marion St., Columbia, S. C. Bids June 30. CD 7/11, under LB.

Busbia Realty Co., 134 8th St., Augusta, Ga., Day Labor, $500,000, 70 RESIDENCES, Richmond Park Subdivision, AUGUSTA, GA.

Curtis Young, 3900 Old Fairburn Rd. S. W., Atlanta, Ga., Day Labor, $500,000, APARTMENT, EAST POINT, GA.

† **Dist. P. Wks. Office, 6th Naval Dist.**, Bldg. 13, U. S. Naval Base, Charleston, S. C., rejected bids July 6, Capehart HOUSING, NBy CH 31213, Spec. 31213/60, MAYPORT, FLA. LB $749,000. CD 7/11, under LB.

▲ **Caldwell-Scott Engineering Co.**, 339 SE 24 St., Fort Lauderdale, Fla., LB Est. $1,000,000, Florida National BANK, 800 Block N. Orange Ave., ORLANDO, FLA. Florida National Bank, c/o James Ganble Rogers, Lovelock & Fritz, archts.-engrs., 145 Lincoln Ave., Winter Park, Fla. Bids June 15. CD 5/24.

Carroll Daniel Constr. Co., P. O. Box 1358, Sanford, Fla., CA $500,000, BANK, SANFORD, FLA. Florida State Bank, 101 W. First St., Sanford, Fla.

Robert Thibodeaux & Co., P. O. Box 887, Baton Rouge, La., LB $526,000, (11 bidders), 1 story, steel frame Baker Heights ELEMENTARY SCHOOL, Baker, BATON ROUGE, LA. East Baton Rouge Parish School Bd., Baton Rouge, La. Bids July 12. CD 6/27.

W. C. Epperson Constr. Co., 1011 Westmoreland Dr., Baton Rouge, La., CA $500,000, 50,000 sq. ft. steel masonry and concrete Greenway SHOPPING CENTER, 8500 block Greenwell Springs Rd., BATON ROUGE, LA. Greenway Shopping Center, Inc., Greenwell Springs Rd., Baton Rouge, La. Manson & Thompson, 244 Peachtree Blvd., Baton Rouge, La., archts. Awarded July 14.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 3 Michigan — August 5 Illinois

STREETS AND ROADS

August 3 Michigan — August 5 Illinois

▲ **Ill., Chicago**—BA 8/2—Bd. Comrs. Cook Co., County Bldg., Zone 2, No. 066-1919.9-CF, 4 span continuous deck plate girder bridge, $1,600,000; No. 066-1314-CF and 066-1414.7-CF, 3-span deck girder railroad bridge, 3-span concrete hy. bridge, $1,480,000; No. 066-1920-CF, 5-span concrete hy. bridge, $410,000; No. 066-1919.5-CF, 5 simple span concrete hy. bridge, $530,000; No. 066-1414.7F-CF furnish, fabricate, 4,137,325 lb. structural steel for bridge, $640.000; No. 066-1313.3 CF-3-span hy. bridge, $275,000.

Ill., Chicago—BA 8/2—Bd. Comrs. Cook Co., County Bldg., Zone 2, No. 066-1919.6-CF and 066-19.9-6A-CF 4,256 ft., 5 to 8 ft., semi-ellip., concrete storm sewers, $560,000. Hugo Stark, 130 N. Wells St., Zone 6, ch. engr. CD 1/14.

Ill., Chicago—TERMINAL—BA 8/4—Dpt. Purchases, City Hall, Zone 2, 2 story airport terminal, Meigs Field, No. 80.85-60-26, $550,000. R. C. Brownell, City Hall, ch. engr. CD 8/27.

Ill., Chicago—BA 7/27—Dpt. Purchases, City Hall, Zone 2, No. 80.63-60-19, relocating S. Cicero Ave., 59th to 55th Sts. $550,000. Dick Van Corp, 320 N. Clark St., Zone 10, ch. engr. CD 2/19.

BUILDINGS—BA

Wis., Medford—HOSPITAL—BA 8/11—Memorial Hospital of Taylor Co., Inc., 2 story, 34,000 sq. ft.

concrete, steel, brick hospital, $800,000. Plans deposit $50. Bergstedt, Hirsch, Wahlberg & Wolds, Inc., 2706 W. 7th St., St. Paul, Minn., archt. CD 5/26.

Ill., Geneseo—LIGHTING PLANT—BA 8/22—City, City Hall, municipal lighting plant. $500,000. Staney Eng. Co., Muscatine, Iowa, engr. CD 5/18.

Ill., Waukegan—CITY HALL—BA 8/22—City, City Hall, city hall addn., alterations, $575,000. Ekstadt Schad & West, 1334 Grand Ave., archts.

HEAVY CONSTRUCTION—LB & CA

▲ OHIO—State Hy. Dpt., State Dpts. Bldgs., Columbus, Zone 15. Bids opened 7/12,

O.—V. N. Holderman & Sons, Co., 890 Oakland Park Ave., Columbus, O., LB $3,485,429, est. $3,934,500 (11 bidders) Proj. 359, Type T 71, structures, 10.006 mi. US Rte. 25-0-00, 17.80, I-75-4(8)102, Auglaize and Shelby Counties; LB $1,830,877, est. $1,984,700 (6 bidders) Proj. 361, Type T 71, structures 1.202 mi. US Rte. 40-10/65, I 70-7(7)157, U 570(8) (City of Zanesville) Muskingum Co.;

O.—Ohio Road Paving Co., 30 E. Broad St., Columbus, O. LB $411,902, est. $382,700 (1 bidder) Proj. 364, Type T 35 9.41 mi. State Rte. 45 (0.00-1.87) (11.13-11.22) (21.25) Village of Orwell, Ashtabula and Trumbull Counties. CD 6/29.

ILLINOIS—State Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Kuch & Watson, Inc., 1112 W. Everett Rd., Lake Bluff, Ill., CA $527,850, 3.39 mi. main line storm sewers, rein.-con. box culvert, FAS 116, Cook Co. Bids July 1, awarded July 18. CD 7/7, under LB.

▲ S. J. Groves & Sons and Kamen Electric Utility Corp., 1104 W. Reynolds St., Springfield, Ill., CA $2,239,338, No. 80.85-60-121, underground electric installation, manholes, ducts, O'Hare Airport, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids June 21. CD 6/30, under LB.

Electric Supply Corp., 701 W. Jackson Blvd., Chicago 6, Ill., LB $455,500, est. $480,000, (6 bidders), No. 9-60-51 street lighting, various locations, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids July 12. CD 11/10.

▲† Kuhne Simmons Co., Inc., 106½ S. Neil St., Champaign, Ill., LB $3,026,361, modifying 70 barracks, Chanute Air Force Base, IFB 11-602-60-69, RANTOUL, ILL. Base Procurement Office, Chanute Air Force Base, Rantoul, Ill. Bids July 1. CD 6/14.

Denton Constr. Co., 20415 Mack Ave., Grosse Pointe, Mich., CA $600,000, wid'n., 2.25 mi., West Rd., Fort St. to Detroit Toledo Expressway, TRENTON, MICH. City of Trenton, City Hall, Trenton, Mich. Awarded July 15.

BUILDINGS—LB & CA

Roz-Eth, Inc., 5715 Brookpark Rd., Cleveland 29, O., Owner Builds, $410,000, 20 RANCH HOMES, Electric Blvd., AVON LAKE, O. Marvin Rukin, 13947 Cedar Rd., Cleveland, Zone 18, O., archt.

▲ English Development, 6704 Hawthorne Dr., Brecksville, O., Own Forces, $1,000,000, 32 HOMES, Cranbrook development, BRECKSVILLE, O.

Fred Teitelbaum Constr. Co., 5526 N. Kedzie Ave., Chicago, Ill., CA $450,000, 50,000 sq. ft. WAREHOUSE, CHICAGO, ILL. National Video Corp., 4300 W. 47th St., Chicago 3, Ill. A. Epstein & Sons, Co., 2011 Pershing Rd., Chicago, Ill., archts. Awarded July 14.

▲ George A. Fuller Co., 111 W. Washington St., Chicago 2, Ill., CA $2,000,000, 8 story, 59,500 sq. ft. DEPARTMENT STORE addn., State and Madison Sts., CHICAGO, ILL. Carson Pirie Scott & Co., 1 S. State St., Chicago 3, Ill. Holabird & Root, 180 N. Wabash Ave., Chicago 1, Ill., archts. Awarded July 14. CD 3/5/55.

Alan Constr. Co., 836 Skokie Blvd., Northbrook, Ill., CA $524,047, general contract Abbott ELEMENTARY SCHOOL, 3630 S. Wells St., CHICAGO, ILL. Bd. Educ., 228 N. LaSalle St., Chicago, Ill. Bids June 27. CD 7/7, under LB.

▲† Abbot Constr. Co., 5789 N. Lincoln Ave., Chicago, Ill. CA $1,260,000, Forrestal Village HOUSING, Naval Training Center, GREAT LAKES, ILL. Dist. P. Wks. Office, 9th Naval Dist., Bldg. 1-A, Great Lakes, Ill. Bids June 21. CD 6/6.

▲ Fairmley-Dickerson Co., 311 E. Lafayette St., Bloomington, Ill., CA $1,661,600, Ottawa Twp. HIGH SCHOOL addns., alterations, OTTAWA, ILL. Bd. Educ., Dist. 140, Ottawa, Ill. Bids July 15. CD 6/20.

▲ Vogel Bros. Bldg Co., 1321 E. Miflin St., Madison, Wis., CA $1,160,927, general contract, JUNIOR HIGH SCHOOL, MADISON, WIS. Bd. Educ., Madison Wis. Bids June 23. CD 7/1, under LB.

▲ Bryant & Detwiller, Inc., 2110 Penobscot Bldg., Detroit 26, Mich., CA $6,000,000, second stage ENGINEERING, SERVICE CENTER and DIVISION HEADQUARTERS, Southfield Rd. and Northwestern Highway, DETROIT, MICH. Michigan Bell Telephone Co., Cadillac Tower, Detroit 26, Mich. Smith, Hinchman & Grylls Assoc., Inc., 3107 W. Grand Blvd., Detroit, Zone 1, Mich., archt.

† Erickson & Lindstrom Constr. Co., 310 Sill Bldg., Flint 2, Mich., CA $479,631 U. S. Army Reserve TRAINING CENTER and MAINTENANCE SHOP. ENG 20-064-60-46, FLINT, MICH. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. Bids June 16. CD 6/2.

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MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
August 2 Kansas
STREETS AND ROADS
August 2, 4 Kansas

† **Okla., Altus**—AIR FORCE BASE SUPPLIES—BA About 8/23—U. S. Eng., P.O. Box 61, Tulsa, Zone 2, Altus Air Force Base, Missile Assembly & Technical Supply, Inv. No. ENG-34-066-61-5. $800,000. CD 9/9/58.

▲† **Texas**—BA 8/23—U. S. Eng., 100 W. Vickery St., Fort Worth, 1,666,000 cu. yd. borrow excav., 1,696,500 cu. yd. compacted impervious and random fill, 27,100 cu. yd. dumped riprap West Embankment, McGee Bend Dam and Reservoir, Inv. No. CIVENG-41-443-61-1. $1,500,000. CD 9/19/58.

BUILDINGS—BA

▲ **Colo., Greeley**—HOSPITAL—BA 8/9—Weld County General Hospital, 16 and 17 Aves., 100 bed hospital addn. $1,000,000. Fisher & Davis, 827 First National Bank Bldg., Denver, archts.

Tex., Dallas—SCHOOL—BA 8/9—Dallas Ind. School Dist., 3700 Ross Ave., Harry C. Withers Elementary School, Northhaven Rd. $558,000. Dales Y. Foster & Assocs., 2727 Cedar Springs Rd., archts. CD 4/13.

▲ **Minn., Brainerd**—PATIENT—BA 8/11—State Dpt. Admin., 19 State Capitol, St. Paul, patient bldgs., State School and Hospital, $2,600,000. Toltz, King, Duvall, Anderson & Assocs., Inc., 1408 Pioneer Blvd., St. Paul, archt. CD 10/20.

Minn., Farmington—SCHOOL—BA 8/11—Bd. Educ. Independent School Dist. No. 192, high school addn. $900,000. Plans deposit $30. H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt. CD 2/4.

N. D., Wyndmere—SCHOOL—BA 8/11—Bd. Educ., Spec. School Dist. No. 42, Junior-Senior High School, $500,000. Foss & Co., 28 N. 2nd St., Moorhead, Minn., archts. CD 6/27.

▲ **Minn., Fridley**—SCHOOL—BA 8/16—Bd. Educ., Independent School Dist. No. 14, Senior High School and elementary school. $2,000,000. Plans deposit $30. Patch & Erickson, 2115 Wayzata Blvd., Minneapolis, archts. CD 7/2/59.

▲ **S. D., Sioux Falls**—COURTHOUSE—BA 8/16—Bd. Comrs. Minnehaha Co. 2 story, steel, stone county courthouse, $1,000,000, Howard Parezo & Assocs., 200 Northwest Security National Bank Bldg., Sioux Falls, archts. CD 3/19.

BUILDINGS—SLC

▲ **Minn., Golden Valley (P.O. Minneapolis)**—PLANT—Minneapolis-Honeywell Regulator, 2573 Fourth Ave. S., Minneapolis, soon lets contract 197 x 615 x 674 ft. L-shaped plant office addn. $1,500,000. Ellerbe & Co., 333 Sibley St., St. Paul, archts. CD 6/16.

Mo., Mehlville (St. Louis 25, P.O.)—SHOPPING CENTER—Lemay Bldg. Corp., c/o Albert Pick Motel, 4628 N. Lindbergh Blvd., Bridgeton, St. Louis County, soon lets contract 1 story, 118,000 sq. ft. shopping center for 39 departments, parking 1,200 cars at Lemay Ferry Rd. and Lindbergh Blvd. for Gem Stores, Inc. $750,000. Manuel Morris, Robert E. Sixta, Assocs., 201 Chandler Bldg., 103 W. 47 St., Kansas City, Mo., archts. CD 7/11, under Mo., St. Louis County, and Gem Stores, Inc., owner.

▲ **Mo., St. Louis County**—RECREATIONAL FACILITIES—Jewish Community Centers Assn., 724 Union Blvd., St. Louis, Zone B, soon lets contract bathhouse, swimming pool, comfort station, admin. bldg. and camp shelter, Y.M.H.A.-Y.W.H.A. recreational facilities, Lindbergh Blvd. and Schuetz Rd. $1,000,000. Schwarz & Van Hoefen, 1620 Chemical Blvd., 721 Olive St., St. Louis, Zone 1, archts. CD 1/27.

Tex., Dallas—SHOPS, etc.— Southwest Wheel, Inc., 944 S. Lamar St., soon lets contract 98,800 sq. ft. steel frame, shops, warehouse and office. $650,000. Gordon & Baker, 3010 Blackburn St., archts. CD 5/12.

HEAVY CONSTRUCTION—LB & CA

▲† **S. N. Zarpas, Inc., & Fullerton Constr. Co.**, P.O. Box 4457, Campbell's Run Rd., Pittsburgh 5, Pa., CA $1,600,000, air route traffic control center, INV 3-60-37, FARMINGTON, MINN. Federal Aviation Agency Region 3, Procurement Branch, Rm. 110, 4825 Troost St., Kansas City 10, Mo. Bids June 21. CD 6/29, under LB.

▲† **Superior Electric Co.**, 136 N. State St., Appleton, Wis., LB $1,352,207, est. $1,368,905, (11 bidders), 110 mi. Jamestown-Grand Forks, 115 kv Transmission Line No. 1, Missouri River Basin Proj., Transmission Div., DC 5353, NORTH DAKOTA. Bureau Reclamation, Dpt. Interior, Fargo, N. D. Bids July 19. CD 6/14.

▲ **Drake, Henne & Wisenberger**, Minot, N. D., LB $1,546,034, est. $1,748,000, (5 bidders), water treatment plant, RAPID CITY, S. D. City, City Hall, Rapid City, S. D. Bids July 15. CD 7/7.

▲ **Adair Pipeline Co.**, c/o Coastal States Gas Producing Co., owner, Petroleum Bldg., Corpus Christi, Tex., CA $545,000, 31 mi. 10 in. natural gas line, Agua Dulce to near Alfred in Jim Wells Co.; CA $630,000, 30 mi., 8 in. and 6 in. gas line, near Cotulla, LaSalle Co., to Pearsall, TEXAS. CD 6/13/58.

† **Southern Constr. Co., Inc.**, P.O. Box 1307, Augusta, Ga., LB $616,702 (9 bidders), remodel, imprv. airman barracks, Lackland Air Force Base, Inv. No. 41-615-60-174, TEXAS. Base Procurement Office, Bldg. 5211, Lackland Air Force Base, San Antonio, Tex. Bids July 8. CD 7/1.

† **C. A. Logeman Co.**, P.O. Box 2255, San Antonio, Tex., CA $899,246, Technical training bldg., appurtenances, ENG-41-243-60-38, LACKLAND AIR FORCE BASE, TEX. U. S. Eng., P.O. Box 1229, Galveston, Tex. Bids June 16. CD 6/22, under LB.

▲ **R. H. Fulton Co. Contractors**, 2323 Erskine Rd., Lubbock, Tex., CA Approx. $2,125,000, 85 mi. petroleum products pipe line, Helena to Great Falls, MONTANA. Yellowstone Pipe Line Co., subsidiary Continental Oil Co., Ponca City, Okla.

Jelco of Wyoming, Inc., Casper, Wyo., CA Est. $700,000, 30 mi. 115,000 volt power transmission line from Casper to steam-electric plant, east of Glenrock, Batrona and Converse Counties, WYOMING. Pacific Power & Light Co., Casper, Wyo.

▲ **NEW MEXICO**—State Dpt. Hys., State Hy. Dept. Bldg., Cerillos Rd., Santa Fe, Bids opened June 17,
N. M.—**Brown Constr. Co.**, 3525 4 N.W., Albuquerque, N. M., LB $690,245, est. $738,450 (2 bidders), 4 mi., I-10, N. Anthony North, Proj. L-010-2(11) 158, Dona Ana Co.; LB $718,758, est. $685,999 (3 bidders), NM 180, Hillsboro to Kingston, Proj. S-1145(12). CD 6/6;
N. M.—**Jack Adams General Constr.**, S. Galisteo Rd., Santa Fe, N. M., LB $633,537, est. $802,807 (3 bidders), US 87, Clayton to Texas State line, Proj. F-046-1(7), Union Co., CD 6/6; LB $288,496, est. $287,920 (3 bidders), NM 120, Roy northeast, Proj. S-1429(11);
N. M.—**Allison & Haney, Inc.**, 1412 Broadway N.E., Albuquerque, N. M., LB $932,081, est. 997,884 (3 bidders), NM 17, Dulco to South Proj. S-1326(12);

BUILDINGS—LB & CA

▲ **S. P. Shakofsky Constr. Co.**, 6601 Delmar Blvd., University City 30, Mo., CA Est. $1,000,000, 14 story APARTMENT, parking, swimming pool, 230 S. Brentwood Ave., CLAYTON (ST. LOUIS 5 P. O.) MO., 230 S. Brentwood, Inc., c/o W. Z. Oxenhandler, Coronet Bldg., 225 S. Meramec Ave., Clayton 5, Mo. Fred C. Sternberg, 7912 Bonhomme Ave., Clayton 5, Mo., archt.

▲ **Forcum & Lannom**, P. O. Box 339, Dyersburg, Tenn., CA $1,412,888, HOUSING, Proj. 21-1, OSCEOLA, ARK., Housing Auth., City Hall, Osceola, Ark. Bids July 12. CD 7/14, under LB.

▲ **Rolling Hills Development Co.**, 906 Georgia St., Amarillo, Tex., Owner Builds, $2,750,000, 250 brick, masonry DWELLINGS, 5-mi. north of AMARILLO, TEX. CD 7/7.

B. L. McGee Constr. Co., P. O. Box 782, Austin, Tex., LB $898,000, general contract Sidney Lanier HIGH SCHOOL, AUSTIN, TEX. Austin. Ind. School Dist., Austin, Tex. Bids July 12. CD 7/7.

Hallmark Homes, 3689 Del Monte St., Houston, Tex., Owner Builds, $880,300, 82 DWELLINGS, Craigmont Addn., BAYTOWN, TEX.

J. E. Morgan & Sons, P. O. Box 6029, Dallas, Tex., CA $810,194, CHURCH EDUCATIONAL, DALLAS, TEX. Highland Park Methodist Church, 3300 Mockingbird Lane, Dallas, Tex. Mark Lemmon, 201 Thomas Blvd., Dallas, Tex., archt. Bids June 21. CD 7/6, under LB.

Raleigh A. Smith & Son, 5710 Airlines Rd., Dallas, Tex., Owner Builds, $925,000, 44 DWELLINGS, DALLAS, TEX. CD 6/20.

The Big Town Co., 800 Big Town, Dallas, Tex., Owner Builds, $422,000 BOWLING CENTER, DALLAS, TEX., CD 7/18.

El Paso Natural Gas Co., Natural Gas Co. Bldg., El Paso, Tex. Owner Builds, $925,000, GASOLINE PLANT, EL PASO, TEX.

Chas. V. Blanton, Contractor, 7327 Sandpiper St., Houston, Tex. Owner Builds, $895,775, seventy-six DWELLINGS, HOUSTON, TEX. CD 4/13.

▲ **George & McBay, Builders**, 4747 W. Alabama St., Houston, Tex., Owner Builds, $1,250,000, APARTMENT, SW Sec. of City, on Midlane, HOUSTON, TEX.

Claude E. Hooten, Jr. Construction Co., 7302 Sandpiper St., Houston, Tex. Owner Builds, $843,210, sixty-five DWELLINGS, Sharpstown, HOUSTON, TEX. CD 4/13.

J. A. Nesbitt Co., P. O. Box 769, Nacogdoches, Tex., LB $608,500, (7 bidders), two DORMITORIES, NACOGDOCHES, TEX. Stephen F. Austin State College, Nacogdoches, Tex. Bids July 12. CD 7/8.

▲ **J. C. Robinson, Contractor**, 5035 Madalyn St., Houston, Tex., Owner Builds, $2,200,500, 139 DWELLINGS, PASADENA, TEX. CD 7/11.

▲ **J. C. Robinson, Builder**, 5018 Old Spanish Trail, Houston, Tex., Owner Builds, $1,768,500, one hundred fifty-nine DWELLINGS, Parkwood addition. PASADENA, TEX.

Ray Ellison Homes, Inc., 103 Springvale St., San Antonio, Tex., Owner Builds, $844,000, 68 frame DWELLINGS, SAN ANTONIO, TEX. CD 5/25.

▲ **Quincy Lee Constr. Co.**, 7303 San Pedro Ave., San Antonio, Tex., Owner Builds, $1,727,960, one hundred seventeen DWELLINGS, Gateway Terrace Subdivision, SAN ANTONIO, TEX. Collins Engineering Co., 833 Bandera Rd., San Antonio, Tex., engr. CD 6/6.

Dillon constr. Co., 325 S. Main St., Pueblo, Colo., CA $757,225, 1 story ADMINISTRATION and DINING HALL, 3 story 120 x 153 ft. control tower and ARSENAL, State Reformatory, BUENA VISTA, COLO. Colorado State Planning Div., State Office Bldg., Denver, Colo. Bids June 30, awarded July 15. CD 7/11, under LB.

Americana Motor Hotels, 817 Austin Ave., Waco, Tex., Owner Builds, $500,000, MOTEL, Chestnut and Fillmore Sts., COLORADO SPRINGS, COLO. A. A. Williams, Jr., 817 Austin Ave., Waco, Tex., archt.

▲ **Americana Motor Hotels, Inc.**, 817 Austin Ave., Waco, Tex., Owner Builds, $1,500,000, MOTEL, East Jewell Ave. and South Bellaire St., DENVER, COLO. A. A. Williams Jr., 817 Austin Ave., Waco, Tex., archt.

▲ **Gerald H. Phipps, Inc.**, Box 2068, Denver, Colo., CA $1,000,000, 3 story, 43,800 sq. ft. HOSPITAL addn., DENVER, COLO. Rocky Mountain Osteopathic Hospital, 4701 E. 9 Ave., Denver, Colo. CD 11/23.

Leiser Constr. Co., Colorado Bldg., Denver, Colo., CA Approx. $500,000, 40,000 sq. ft. PLANT EXPANSION, DENVER, COLO. Tasty Foods Inc., 1170 W. 46th Ave., Denver, Colo.

Worsham Constr. Co., 2627 W. 6th Ave., Denver, Colo., CA Approx. $500,000, 30,000 sq. ft. PLANT EXPANSION, DENVER, COLO. Hathaway Instrument Co., Inc., 5800 E. Jewell Ave., Denver, Colo.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
August 9 Washington August 24, 25 California

BUILDINGS—BA

▲ **Wash., Seattle**—SCIENCE—BA 8/4—Seattle University, Broadway and E. Madison Sts., 5 story, bsmnt., 72,000 sq. ft. rein.-con. SCIENCE, $2,000,000. W. Maloney, Central Bldg., archt. CD 11/14/57.

Calif., Glendale—SCHOOL—BA 8/11—Glendale Unified School Dist., 411 E. Wilson Ave., 1, part 2 story, 5 bldgs. Lowell Ave. school, La Crescenta. $550,000. Wm. Wollett, 2500 W. 6 St., Los Angeles, Calif., archt. CD 12/29/59.

▲ **Wash., Everett**—OFFICE—BA 8/11—Office of R. E. Decker, archt., 1411 4th Ave. Bldg., Seattle, Zone 1, 3 story, part bsmnt, 72 x 264 ft., steel office, for West Coast Telephone Co., 2701 Wetmore Ave. $1,000,000. CD 12/24.

▲ **Ore., Salem**—DORMITORY—BA 8/16—Willamette University, 900 State St., mens dormitory. James L. Payne, 725 S. Commercial St., archt. CD 3/1.

BUILDINGS—SLC

▲ **Calif., Anaheim**—WAREHOUSE, etc.—Robert & Stiles Clements, archts., 830 Wilshire Blvd., Los Angeles, soon lets contract 1 story, concrete warehouse and office for General Foods Corp., 250 North St., White Plains, N. Y. $1,000,000.

HEAVY CONSTRUCTION—LB & CA

▲ **WASHINGTON**—State Hy. Comn., Olympia, Bids opened 7/19,
R. L. Houck Sons Corp., Santiam Junction, Salem, Ore. LB $1,743,195, est. $2,132,000, (7 bidders), paving bridge, Primary State Hy. No. 1, Clark Co. CD 6/29.

† **Donald M. Drake Co.**, 1600 NW Eavier St., Portland, Ore. CA $903,018, Upper End Modoc Creek Section Eastside Rd., Hills Creek Reservoir, Civeng. 35-026-60-208. OREGON, U. S. Eng., Pittock Block, Portland, Ore. Bids June 24, awarded June 30. CD 7/1, under LB.

▲ **Tucci & Son and Woodworth & Co.**, 2815 S. Lawrence St., Tacoma, Wash., CA $1,694,877, 44 mi. interceptor, trunk lateral and house sewers, WEST SLOPE, ORE. West Slope Sanitary Dist., 3105 SW 89th Ave., West Slope, Ore. Bids May 11, awarded July 11. CD 5/18, under LB.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Bids July 14,
Arrow Road Constr. Co., 1500 S. Harlem Ave., Forrest Park, Ill., LB $451,221 (7 bidders), grading, paving, wid'n. State Sign Rte. 138 between 1.5 to 4.5 mi. east of Palmdale, VII-L.A.-59-J. CD 6/20.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened July 20,
Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif., CA $3,806,235, (7 bidders) 1.1 mi., 8-lane freeway MacArthur Freeway, U. S. Hy. 50, between San Pablo Ave. and Broadway Oakland, incl. 9 traffic separation and ramp structures. IV-ALA-5-OAK Alameda Co. CD 6/16.

▲† **L. E. Dixon Co. & W. E. Kerr Constr. Co.**, 409 S. California St., San Gabriel, Calif., CA $1,734,900, Station Hospital and Dental Clinic, Naval Air Station, NBy 29254, LEMOORE, CALIF. Dist. P. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids June 21. CD 6/30, under LB.

▲ **Fred J. Early Jr. Co., Inc. & Stolte, Inc.**, 369 Pine St., San Francisco, Calif., CA $6,335,000, sewage treatment plant and sewer trunk lines, near SACRAMENTO, CALIF. Southeast County Sewer Assessment Dist., Sacramento Co. P. Wks. Dpt., 827 7 St., Sacramento, Calif., awarded July 18. CD 7/7, under LB.

E. C. Young, 3256 "F" St., San Diego 2, Calif., LB $483,544 (7 bidders) imprv. Chollas Parkway between

University Ave. and 54 St., SAN DIEGO, CALIF. City, Rm. 161, Civic Center, San Diego 1, Calif. Bids July 12 CD 6/22.

BUILDINGS—LB & CA

Glacier Constr. Co., 5536 Coniston Rd., Seattle, Wash., LB $545,000 (7 bidders), general contract. 2 story Madrona ELEMENTARY SCHOOL ADDN., SEATTLE, WASH. School Dist. 1, 815 4 Ave., Seattle, Wash. Bids July 14. CD 6/24.

Nylin Hurd Constr. Co., 1317 Santiago Ave., Santa Ana, Calif., CA $575,992, Aloha ELEMENTARY SCHOOL, ARTESIA, CALIF. Bloomfield School Dist., 2185 Norwalk Blvd., Artesia, Calif. Kenneth S. Wing, 30 Linden Ave., Long Beach, Calif., archt. Awarded July 13.

▲ **Nick Pokrajac**, 14427 Joan Bridge Ave., Baldwin Park, Calif., LB $1,001,134, est. $800,000, (13 bidders), Sierra Vista HIGH SCHOOL, BALDWIN PARK, CALIF. Baldwin Park School Dist., 3609 N. Vineland Ave., Baldwin Park, Calif. Kistner, Wright & Wright, 1125 W. 6th St., Los Angeles, Calif., archts. Bids July 12. CD 6/30.

Peter Kiewit Sons, 345 Kieways Ave., Arcadia, Calif., CA $500,000, 90,900 sq. ft. PROCESSING WAREHOUSE, 2342 S. Tubeway Ave., COMMERCE, CALIF. Butternut Coffee Food Co., 8401 W. Dodge Rd., Omaha, Neb. Leroy A. Daly & Assoc., 49 Maiden Lane, San Francisco, Calif., archts.

S V. & R. C. Co., 4405 Irwindale Ave., Covina, Owner Builds, $504,000, forty-two DWELLINGS, Candish Ave., Ivy St., Heather St., Payson St., Tract 25418, GLENDORA, CALIF.

▲ **James I. Barnes Constr. Co.**, 1119 Montana Ave., Santa Monica, Calif., LB $1,762,200, (8 bidders), Marion Davies CHILDREN'S CLINIC, LOS ANGELES, CALIF. University of California, 405 Hilgard Ave., Los Angeles, Calif. Bids July 19. CD 6/15.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria.

Windsor Constr. Ltd., 1603 W. 3rd St., Vancouver, B. C., CA $1,439,441, 4.8 mi. Vancouver-Blaine Hy. Delta Dist. Awarded July 14. CD 6/24, under LB.

ONTARIO—Dpt. Hys., Parliament Bldgs., Downsview, **Russell Constr. Co., Ltd.**, 504 Harbor Comrs. Bldg., Toronto, Ont., CA $789,309, high level bridge, west substructure, incl. grading, granular base, surf. treatment, Queen Elizabeth Way, (Contract 60-06) Homer. Bids June 22, awarded July 12. CD 6/30, under LB.

BUILDINGS—LB & CA

Bird Constr. Co. Ltd., 1427 19th Ave. S.E., Calgary, Alta., CA $600,000, 3 story, 32,000 sq. ft., steel, concrete FRENCH PETROLEUM addn., CALGARY, ALTA. Derrick Buildings Ltd., 528 9th Ave. S.W., Calgary, Alta. Clayton, Bond & Mogridge, 516 10th Ave. S.W., Calgary, Alta., archts. Awarded July 5.

▲ **Burns & Dutton Concrete & Constr. Co. Ltd.**, 5720 4th St., Calgary, Alta., CA $1,657,000, general contract 4 story, steel, concrete COURT HOUSE, CALGARY, ALTA. Alberta Govt., Parliament Bldgs., Edmonton, Alta. Awarded July 14; **Canadian Comstock Co., Ltd.**, Sun Bldg., Edmonton, Alta., CA $484,704, mech. contract, court house (Calgary, Alta.).

Wyatt Constr. Co. Ltd., 383 McMillan Ave., Winnipeg, Man., CA $537,740, SCHOOL, auditorium, SELKIRK, MAN. Lord Selkirk School Div. No. 11, Selkirk, Man. Bids June 2, awarded July 6. CD 7/5, under LB.

Roy Oakes Investments Ltd., c/o Mr. Abraham, 534 Lawrence Ave. W., Rm. 222, Toronto, Ont., Owner Builds, $504,000, 4 story, brick, structural steel APARTMENT, poured concrete fdn., Roy Oakes Dr. and Don Mills Rd., TORONTO, ONT.

Ain & Zakuta Ltd., 6910 Wiseman Ave., Montreal, Que., CA Est. $650,000, 7 story COMMERCIAL BLDG., Iberville St., MONTREAL, QUE. Triton Investment, Inc., c/o H. M. Tolchinsky, archt., 5810 Cote St. Luc Rd., Montreal, Que. Bids June 28, awarded July 11. CD 6/30.

Bee Constr. Co., Ltd., 9945 Park Georges St., Montreal, Que., LB $512,850, MUNICIPAL YARD BLDG., Des Carrieres Yard, MONTREAL, QUE. City, City Hall, Montreal Que. Bids June 13. CD 6/6.

Cimota Constr. Corp., 3340 Blvd. Ste. Anne, Quebec City, Que., CA $568,828, PARISH CHURCH, ST. LOUIS DE FRANCE, QUE. Fabrique de la Paroisse de St. Louis de France, Que. Awarded July 13. CD 5/16, under LB.

Boychuk Constr. Co., Ltd., 2122 8th St. E., Saskatoon, Sask., CA $479,280, 2 story, bsmnt., masonry, steel PLANT and office, Avenue E and 23rd St., SASKATOON, SASK. Dairy & Poultry Pool, Saskatoon, Sask. Webster, Forrester & Scott, Saskatoon, Sask., archts. Awarded July 5.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Nicaragua**—BA 9/30—Empresa Nacional de Luz y Fuerza, Managua, 18 kilometer road for first stage Tuma-Matagalpa-Viejo Hydroelectric system, Contr. TMV 1b1. Plans deposit $250. Electroconsult, Milano Via Cavallotti 13, Milan, Italy, engr., adv ENR 7/28. CD 7/19.

(Proposal Advertisements see pp. 84 and 85)

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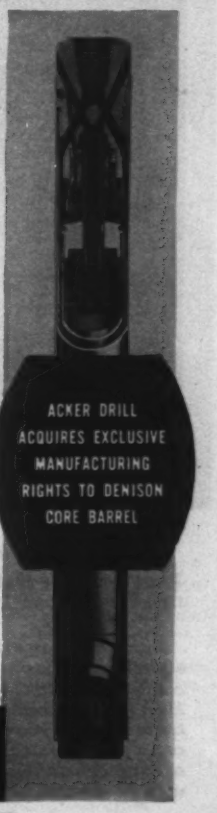

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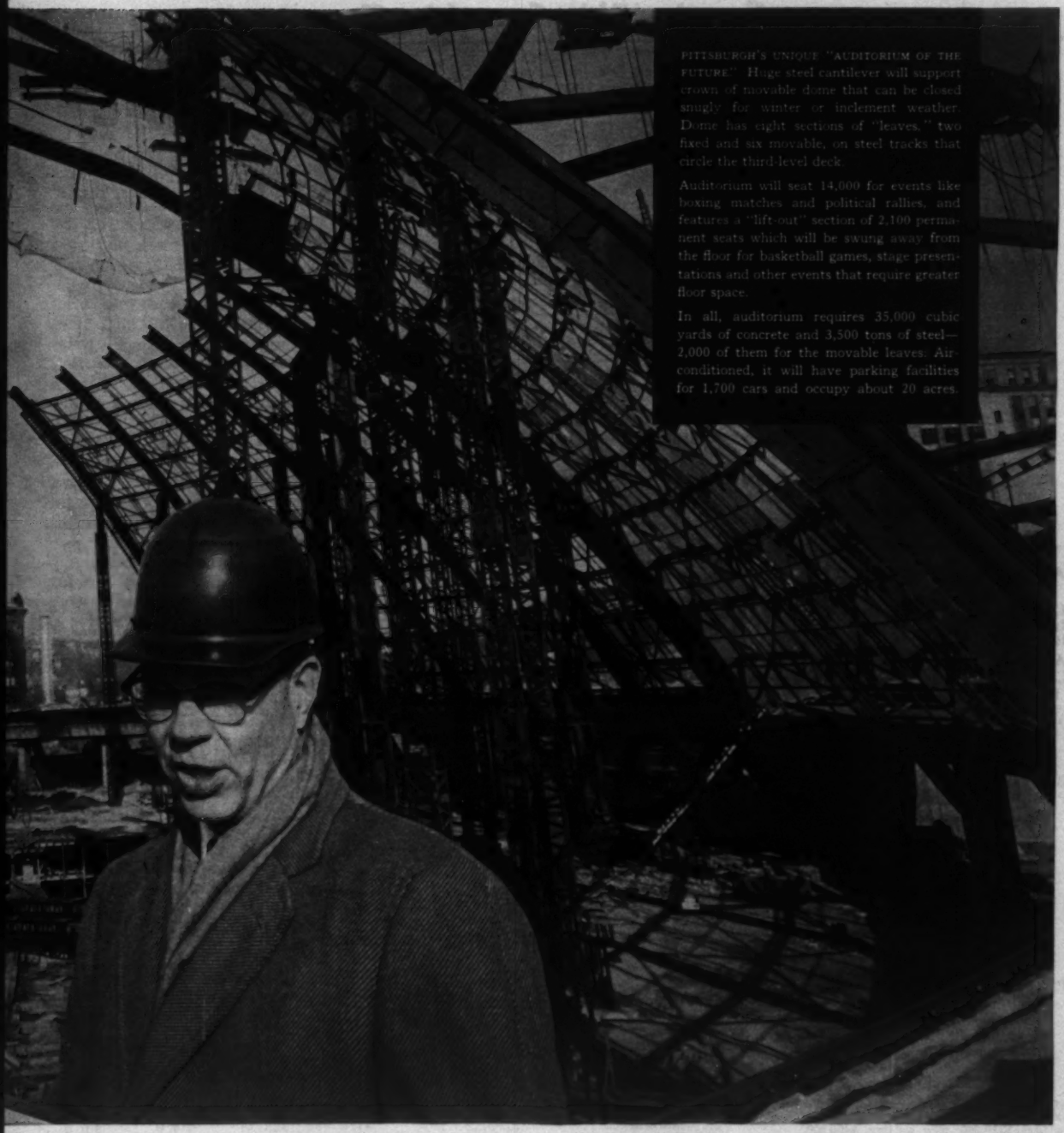
Rey Helvenston has had construction in his blood since he was 10, when he began working after school. At 14, he was survey party chief for an engineering firm. And ever since he obtained his degree, he has been attracted to unusual jobs with special problems and hazards. The Pittsburgh assignment is no exception—he performs the coordinating role of the missing general contractor in dealing with the eight separate contractors on the job, and doubles



PITTSBURGH'S UNIQUE "AUDITORIUM OF THE FUTURE". Huge steel cantilever will support crown of movable dome that can be closed snugly for winter or inclement weather. Dome has eight sections of "leaves," two fixed and six movable, on steel tracks that circle the third-level deck.

Auditorium will seat 14,000 for events like boxing matches and political rallies, and features a "lift-out" section of 2,100 permanent seats which will be swung away from the floor for basketball games, stage presentations and other events that require greater floor space.

In all, auditorium requires 35,000 cubic yards of concrete and 3,500 tons of steel—2,000 of them for the movable leaves. Air-conditioned, it will have parking facilities for 1,700 cars and occupy about 20 acres.

as resident engineer for the owner (The Public Auditorium Authority), architects and consulting engineers.

Men like Rey Helvenston—and the engineers, designers, contractors and financial men who team up with him to turn big ideas into big realities—have to keep abreast of new developments in all phases of construction. These are the men who turn to Engineering News-Record each week—as part of their jobs—for the latest news and information on the materials, methods, machinery, money and manpower they need in their work. These are the men you sell when you advertise in Engineering News-Record.

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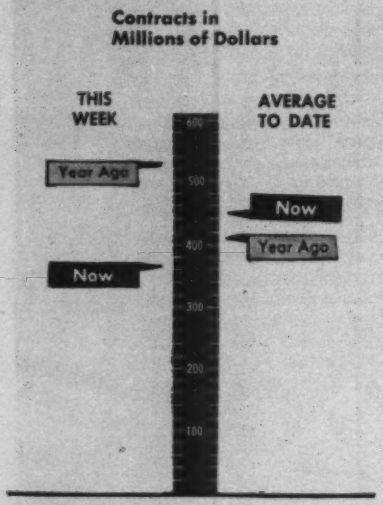
Construction Scoreboard

This Week...



AMOUNT OF CONTRACTS LET

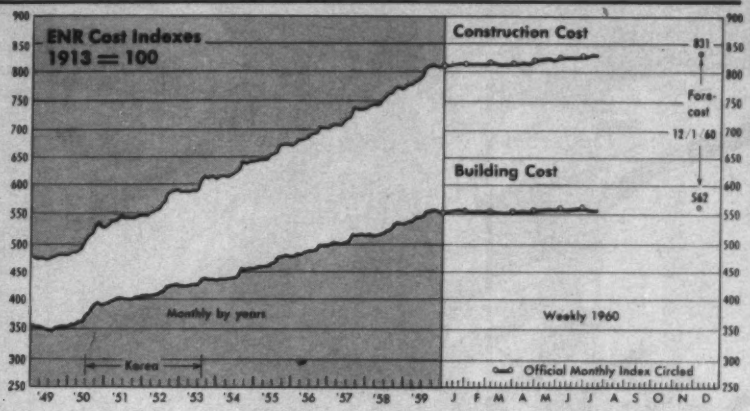
Contracts Awarded In 50 States By Type	This Week millions	Cum. 30 wks 1960	Chge '59-'60 %
All Heavy Construction	$365.5	$13,367.1	+ 7
By Ownership			
PRIVATE	214.4	7,216.5	+19
PUBLIC	151.1	6,150.6	− 4
State & Municipal	132.1	4,665.0	+ 4
Federal	19.0	1,485.6	−23
By Type of Work			
PUBLIC			
Waterworks	4.1	287.8	+ 9
Sewerage	19.1	355.7	− 9
Brigdes*	6.7	454.7	+31
Highways	58.1	1,919.1	+ 3
Earthwork, Dams & Waterways	6.3	477.7	−16
Buildings:			
Excl. Housing	26.6	1,409.3	−12
Housing	8.6	358.0	−24
Unclassified	21.7	889.6	0
PRIVATE			
Buildings:			
Mass Housing	73.8	3,620.1	+29
Commercial	80.8	1,453.0	+ 9
Industrial	53.4	1,586.3	− 3
Unclassified	6.3	555.8	+83

* Includes Private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of July 21 millions	Cum. 29 wks 1960	Chge '59-'60 %
Corporate Securities	$ 79.7	$1,727.5	−24
State and Municipal:			
All Except Housing	85.3	3,936.9	+ 9
Housing	....	182.2	+142
Federal Loans	0.2	105.8	+21
Federal Aid	....	2,717.8	+15,000
Total Nonfederal	$165.2	$8,670.2	+43
Federal Appropriations:			
Projects in U.S.	$847.9	$1,139.4	+2,875
Outside U.S.	147.0	157.8	....
Total New Capital	$1,160.0	$9,967.4	+63



ENR INDEXES (1913=100), 20-cities' average	Week of July 21 1960	% Change from June 23 1960	% Change from July 23 1959
Construction Cost	830.37	+0.51	+2.17
Building Cost	560.85	+0.02	+0.95

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850. 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	June 1960 (millions)	Percent Change from last Month	Percent Change from last Year
Total U. S. (50 states)	$122,678	−0.2	+7.5
By Ownership—			
Private	54,981	+0.4	+10.4
State & Municipal	53,637	−0.3	+5.6
Federal	14,060	−1.8	+4.0
By Type of Work—			
Waterworks	2,891	−0.4	+7.4
Sewerage	3,892	−0.7	+8.0
Bridges	3,345	−0.2	−0.7
Highways	13,720	−0.6	+7.1
Earthwork, Dams and Waterways	11,854	−0.7	+1.4
Public Buildings	22,142	−0.2	+7.5
Industrial Buildings	17,713	+0.4	+4.8
Commercial Buildings	26,621	+0.4	+18.5
Unclassified, Private	10,647*	−0.4	+2.0
Unclassified, Public	9,853	−1.6	+3.0

* Includes Private Bridges, $98 million.

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1960 June (millions)	1960 6-months (millions)	Percent Change from 1959 June†	Percent Change from 1959 6-Mos.
Total U. S. (50 states)	$1,614	$12,322	+17.1	+21.7
By Ownership—				
Private	1,085	7,003	+28.9	+25.1
State & Municipal	501	4,621	+4.6	+23.0
Federal	23	698	−51.2	−9.2
By Type of Work—				
Waterworks	26	197	−7.8	−14.5
Sewerage	41	325	+4.0	+6.0
Bridges	8	149	−75.5	−39.1
Highways	85	1,547	+12.1	+58.3
Earthwork, Dams and Waterways	25	109	+45.0	−6.6
Public Buildings	321	2,340	+7.9	+13.5
Industrial Buildings	239	1,847	+49.0	+10.8
Commercial: Mass Housing	330	3,199	+21.3	+65.1
Other Building	375	1,570	+72.6	+17.7
Unclassified, Private	140	387	−27.0	−41.4
Unclassified, Public	24	651	−47.5	+10.7

FLOW OF PROJECTS OUT OF BACKLOG INTO CONTRACTS

Total U. S. (50 states)	$1,441	$5,661	+27.6	+7.1
By Ownership—				
Private	607	2,259	+64.1	+26.6
State & Municipal	572	2,437	+11.1	+5.4
Federal	262	965	+7.1	−18.7

† Based on average week: 5 weeks in June, 1960; 4 weeks in June 1959.

Fewer A-Es in the Chips in '59

The number of architect-engineers who put $100,000-or-more of new heavy construction business on their drawing boards last year was down slightly from 1958 and down considerably from the record year, 1955.

Last year 455 A-Es chinned themselves over the $100,000 bar, compared to 467 the year before and 494 in high-riding '55.

If the big volume A-Es were slightly fewer in number last year, those who were making it were making it bigger. The number with volumes of $1 million-or-more was up 3% from '58 to 326. The number who pulled in between $500,000 and $1 million remained about the same, 54 last year to 55 the year before. The big drop came in the $100,000-to-$500,000 category—there were anly 75 A-Es in that category last year, compared to 97 the year before.

School design was the most popular type of work, followed by industrial and mass housing, in that order. Substantially more A-Es were taking on those three types of work in '59 than in '58 (see table). The number of firms with new plant design work was the highest since 1955's count of 194.

However, there were fewer firms taking on other building jobs in '59.

Each of the other-than-building categories provided work for more A-Es last year than the year before. The 1959 count is the highest since 1955 in all of those categories, and in one—sewerage and bridge design—there were a record number of A-Es.

The number of A-Es in the 100,000-and-up category who took on highway and street design totaled 50, a 28% increase over 1958. A-Es doing bridge design totaled 34, 55% above '58.

Last year's surge in airport and missile base activity helped to shove the number of A-Es doing this type of work in 1959 to a total of 96.

Contract Let for $60-Million Job

The increasing demand for steel in the West has led to a construction start on a taconite iron ore mining and processing project in Wyoming that eventually could involve outlays of more than $60 million.

A contract for preparation and partial construction of the complex was recently awarded by Columbia-Geneva Division of United States Steel Corp. to J. H. Pomeroy & Co., Inc., and Bechtel Corp., both of San Francisco.

Contract price is reportedly about $60 million (ENR June 23, p. 37). Work at the site, in southwestern Wyoming, near Lander, will be started immediately by the Pomeroy-Bechtel Taconite Ore joint venture. Completion of the joint venture contract is expected by mid-1962.

Work under the contract will include:

- About 7.5 million cu yd of excavation.
- Placement of more than 33,000 cu yd of concrete.
- Damming and rerouting of a stream around the site and construction of a reservoir and two auxiliary earthfill dams.
- Construction of a 77.9-mile railroad spur from the site to the main line of Union Pacific Railroad at Rock Springs.
- Construction of foundations, structures and utilities.

A-E's New Business in 1959—$100,000 or More

Type of Work	All Architect-Engineers Doing $100,000 or more			A-E's with $1,000,000 or more			A-E's with $500,000-$1,000,000			A-E's with $100,000-$500,000		
	1959	1958	Change '58-'59 %	1959	1958	Change '58-'59 %	1959	1958	Change '58-'59 %	1959	1958	Change '58-'59 %
TOTAL	455	467	− 3	326	315	+ 3	54	55	− 2	75	97	−23
OTHER THAN BUILDING												
Waterworks	51	43	+19	43	38	+13	5	1	+400	3	4	−25
Sewerage	76	52	+46	63	44	+43	5	2	+150	8	6	+33
Bridges	34	22	+55	30	19	+58	2	1	+100	2	2	0
Highways and streets	50	39	+28	47	30	+57	1	3	−67	2	6	−67
Earthwork & waterways	27	24	+13	25	21	+19	1	1	0	1	2	−50
Airports	96	80	+20	90	66	+36	0	4	−100	6	10	−40
Unclassified	102	84	+21	92	69	+33	3	1	+200	7	14	−50
BUILDING												
Industrial	182	158	+15	150	122	+23	9	8	+13	23	28	−18
Mass housing, commercial and public	432	373	+16	351	277	+27	48	47	+ 2	33	49	−33
Housing	163	122	+34	143	97	+47	16	16	0	4	9	−56
Schools	190	176	+ 8	155	143	+ 8	18	21	−14	17	12	+42
Offices, private	55	70	−21	51	64	−20	4	5	−20	0	1	−100
Offices, public	33	48	−31	33	44	−25	0	3	−100	0	1	−100
Shopping centers, stores	52	53	− 2	49	45	+ 9	1	5	−80	1	3	−67
Public industrial, military and atomic energy	33	44	−25	29	38	−24	1	1	0	3	5	−40
Other building, private	100	100	0	90	86	+ 5	5	4	+25	5	10	−50
Other building, public	82	75	+ 9	76	68	+12	3	2	+50	3	5	−40
FEDERAL (included above)	117	120	− 3	111	95	+17	2	5	−60	4	20	−80

ENR Data

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This special Pebble Bed Heater for a new hypersonic wind tunnel at the Douglas Aircraft Company's Aerophysics Laboratory pre-heats pressurized air entering the tunnel, and reduces water formation.

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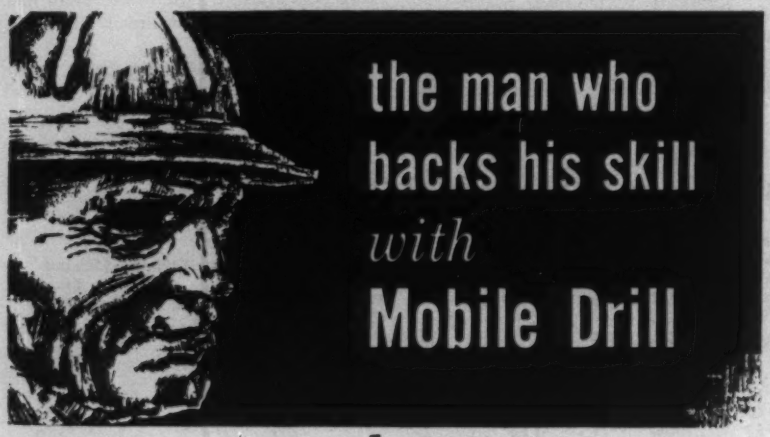

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Less Work in Place

New U. S. estimate shows '60 falling behind '59

Revised government estimates of put-in-place new construction for 1960 this week raised the forecast total to $55.825 billion, $525 million above the $55.3 billion foreseen last fall by the Construction Industry Division of the Commerce Department (ENR Dec. 3, 1959, p. 25).

This increase, however, is not enough to counterbalance a $2-billion upward adjustment in the 1959 figures, so 1960 is expected to fall $200 million behind 1959 in dollar volume.

Improved statistics on housing starts by the Census Bureau more than account for the total construction increases in both years.

Value of work put-in-place on privately financed new dwelling units goes up $2.23 billion for 1959 and $1.4 billion for 1960 in the revision of last fall's estimates.

Housing's big boost is based on the Census Bureau's better figures for new home starts. The bureau's expanded coverage of private starts caused the Construction Industry Division to raise its construction estimates for this category all along the line. The division now expects homebuilders to start 1,325,000 privately financed units this year, up 125,000 from the estimate of nine months ago, on the assumption that the second half of 1960 will see a rise in the rate of new starts.

Alaska and Hawaii also make a modest contribution on the plus side to the revised construction forecasts. The two new states were not included in the Commerce Department estimates when last fall's outlook was prepared.

The construction analysts also point to a key weakness—the physical volume of new construction put in place this year is shrinking more than the dollar volume. Commerce economists estimate a moderate increase for 1960 construction costs, with a resulting small decline in work put-in-place.

The revised construction dollar volume figures show about the same anticipated spending for major categories of private construction as did last fall's outlook for this year. Industrial construction goes up $250 million, but this gain is cancelled out by a similar markdown for commercial construction.

Private nonresidential buildings of other classifications also show a net letdown of $125 million.

Privately owned public utilities show a net gain of $25 million above the estimate of nine months ago.

ALPHA news and notes from the field

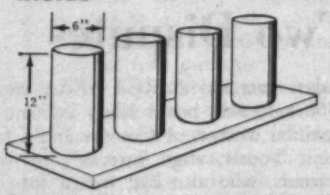
BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

CONCRETE TEST CYLINDERS—the right way to make them

A concrete test specimen seldom seems very important at the time it is being made. However, if trouble develops with concrete on a job, the test specimen immediately becomes a critical factor, regardless of the size of the project.

A concrete producer can guarantee concrete strength only if test specimens are made and cured according to standard methods. Concrete compression tests are made to determine concrete quality. If curing conditions, methods of sampling and methods of casting are allowed to vary, strength results are worthless because one can seldom determine whether a low strength is due to poor quality concrete or poor practices after concrete left the ready mix truck. For reliable test results, the following test procedures should be followed:

1. Use only non-absorptive molds

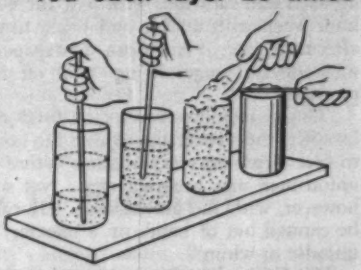


Steel, or paraffin-sprayed paper molds, 6″ in diameter by 12″ high, are usually used for casting concrete cylinders in the field. Before filling, they should be placed on a smooth, firm, level surface. A single strength test is generally defined as consisting of an average of 3 standard test specimens. Therefore, be sure to make at least 3 cylinders for each age test—usually 7 and 28 days.

2. Take sample from 3 parts of load

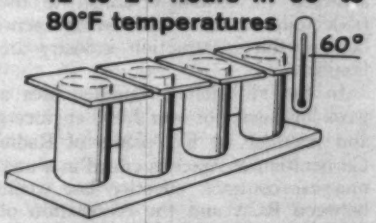
A sample should be obtained from at least 3 parts of the load and taken directly from the truck or mixer discharge. Before filling the molds, the individual portions of the sample should be thoroughly re-mixed in a large flat pan, wheelbarrow or on other clean, non-absorptive surface.

3. Fill molds in 3 layers and rod each layer 25 times



Molds should be filled in 3 equal layers, and each layer rodded uniformly 25 times with ⅝″ *bullet-pointed rod.* When rodding upper layers, the rod should just extend through into the layer underneath. *All* molds should be filled uniformly—that is, place and rod the bottom layer in all samples, then the 2nd layer, etc. The 3rd layer should contain an excess. After tapping sides of mold with rod, strike off excess with trowel.

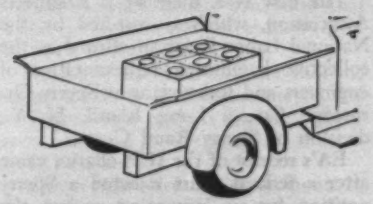
4. Let cylinders stand from 12 to 24 hours in 60° to 80°F temperatures



Cylinders should be left undisturbed until they have hardened enough to withstand handling—from 12 to 24 hours after casting. Tops should be covered with glass plates, oiled paper, wet burlap or similar material to prevent loss of moisture. The temperature should not drop below 60° or rise above 80°F *where cylinders are stored.* Cylinders left on the job for several days at low or high temperatures will give erratic results *unless carefully protected.*

5. Cure and handle cylinders with care

After setting for 12 to 24 hours, cylinders should be placed in moist curing at 70° or sent to a laboratory for standard curing. Careful handling is still necessary since cylinders which are allowed to rattle around in a box, or the back of a car, or pickup, can suffer considerable damage. Use sawdust or similar material for cushioning.



Use a bullet-nose rod

The purpose of rodding test cylinders is to compact the concrete and make it free of the large air voids which reduce strength. Too many people reach for the handy piece of reinforcing steel to rod the concrete. Some just kick the mold instead of rodding. It has been found that the bullet-nose ⅝″ rod does the job best for two reasons:

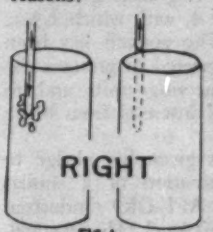


FIG. 1

a. It slides over the aggregates (See Fig. 1) instead of pushing them along as with a blunt rod and leaving large voids as the rod is withdrawn (See Fig. 2).

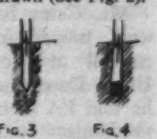


FIG. 3 FIG. 4

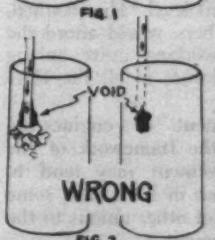


FIG. 2

b. As the rod is withdrawn, the concrete should close smoothly after it. The bullet-nose encourages this as in Fig. 3, while a square or irregular shaped tip performs as shown in Fig. 4.

Reprints of this page are available free of charge. Contact your local Alpha representative or the home office.

ALPHA

PORTLAND CEMENT COMPANY

Alpha Building, Easton, Pa.

Professionals Join Trade Union Group

The engineering union that spearheaded the ill-fated effort to form a national federation to be known as Engineers and Scientists Guild has formally affiliated with the AFL-CIO's International Union of Electrical Workers.

IUE President James B. Carey hailed the affiliation as "the opening of a new and significant era in relations between professional engineers and trade unions."

The new IUE member is Engineers Association, which is certified by the National Labor Relations Board as the collective bargaining representative of engineers and technicians at Sperry Gyroscope Co., a Long Island, N. Y., division of Sperry Rand Corp.

EA's receipt of the IUE charter came after a federal court rejected a Sperry petition for an injunction against the affiliation. The move into the ranks of the trade union had been approved by 60% of the EA members.

The affiliation may mark a turning point in the direction of engineering unionism.

The big inducement offered EA was formation of an Engineering Council in IUE's District 4, with which EA is now affiliated. The council has been formed and is expected to preserve the identity of engineering units and to keep their special interests from being lost or diluted.

Mr. Carey has given his pledge to work toward formation of a similar council at the AFL-CIO Industrial Union Department level. That council, he told EA members, would afford the mechanism for working unity among engineering employees in all the IUD affiliates.

The development of engineering councils within the framework of the trade union movement may tend to overcome, as it has in EA's case, some of the reluctance of other unions to the trade union movement.

In the past, EA has searched for unity through some kind of a national federation of independent unions. Engineers and Scientists of America was not the answer because ESA's switch to professional membership excluded affiliation by unions whose members include technicians. The search produced the ESG movement but ESG never became a reality. EA President Charles Hall was provisional president of ESG.

Mr. Carey told EA members that trade union affiliation does not make a professional "less professional."

Citing membership in the American Newspaper Guild, AFL-CIO, as an example, he said: "The point I want to make here is that becoming union members did not make newsmen less professional; they are as professional now as they ever were. But now they have union protection also: union wage scales, holidays and vacations with pay, the 40-hour week with double and triple time afterward, etc. American newspapermen are no longer being 'paid off in prestige'.

"Union members cannot be fired arbitrarily; their contracts require the boss to give satisfactory explanation before a union man may be discharged. Not so, however, with the professional. He can be canned out of hand, on a manager's impulse or whim."

The IUE takes the position that the welfare of professionals depends upon their ability to bargain collectively. It says that professional objectives can be obtained only through "a strong and dedicated bargaining agent." It includes job security, working conditions that permit the highest development of skills, and rewards big enough to keep them in their profession among the objectives.

In the lawsuit brought by Sperry, the company contended that EA's labor contract prevented affiliation without a majority vote of all employees represented by the union, including both union and nonunion members. The affiliation had been approved by a membership vote only.

In denying Sperry's request for an injunction against affiliation, the Federal District Court in New York City said it was powerless to act under the Norris-LaGuardia Act, which is not limited to "yellow dog" contracts.

The granting of an injunction to prevent breach of the labor contract clause, the court explained, would impinge on the full freedom that the law grants employees to associate and to designate collective bargaining representatives.

Engineers Settle Two Disputes

Recent examples of bargaining by engineering unions and the results achieved are strikingly similar to the trade union activity with which members of the construction industry are familiar.

In the Philadelphia-Camden area a week-long strike of over 2,000 engineers and scientists at five plants of Radio Corporation of America ended in a new one-year contract, effective last week, between RCA and the Association of Professional Engineering Personnel—ESA. APEP is an affiliate of Engineers and Scientists of America, which is a national federation of unions of professional engineers and scientists.

In the San Diego area Engineers and Architects Association—largest of the West Coast engineering unions—and the Convair-San Diego and Convair Astronautics divisions of General Dynamics Corp. reached a contract agreement after three months of negotiations during which the union at one point called a once-weekly walkout. The agreement is subject to mail referendum by the union members.

EAA, which was active in the effort to form Engineers and Scientists Guild, has several chapters in California. Two of them have a high content of civil engineers.

APEP won a 4¼% across-the-board salary increase at RCA. EAA won a 3% across-the-board salary increase for salaried workers at Convair and a four-cent hourly wage increase for wage earners, who also had frozen into the contract the five-cent hourly cost-of-living increase they were getting.

The APEP-RCA agreement also provides for:

- A company commitment not to discriminate against any member of the union for respecting a picket line.
- Payment of salaries for last July 4th.
- Extension of the grievance machinery to complaints and grievances with reference to the evaluation of the performance of an engineer.
- Submission of a signed copy of the rating form to each engineer at the time of his merit rating review.
- In cases of denial of a merit salary increase, a rereview of the engineer at the end of half his normal review period.
- Payment for time spent in arbitration.
- An increase in patent payments.

The contract continues in effect, but subject to review, existing letters of agreement on such matters as the pension plan, attendance at professional society meetings and insurance while traveling on company business.

The agreement was ratified by a vote of 1,542 to 69.

Labor in Brief . . .

• **Hoffa wins a point**—The federal court decree that set up the teamster board of monitors does not give the lower court power to remove James Hoffa as union president, an appeals court ruled last week. Result: Mr. Hoffa's future lies in the hands of a teamster convention.

• **Holiday work**—Operating engineers have accepted an Anaconda Co. labor contract that calls for double time and a quarter for holiday work after May 1, 1961.

• **An unusual proviso**—A new two-year labor contract between the carpenters union and IBEC Housing Corp. in Puerto Rico gives each worker represented by the union a chance on an $8,000 house in a raffle provided for in the contract. The AFL-CIO says workers get a 15-cent hourly increase payable in three installments, five cents an hour for a Christmas bonus and improved health program. Union represents all workers except heavy equipment operators.

Kansas City Strike Is Settled

The construction industry has pushed through another week of collective bargaining marked by substantial settlements and crippling strikes.

The biggest break came in Kansas City, Mo., where a four-year, 57½-cent settlement with hoisting engineers brought an end to a long and costly shutdown that had paralyzed the industry for nearly four months.

But in New York City, a scow captains' strike stopped the flow of sand, gravel and ready-mixed concrete, adding to the woes of local contractors who already had three strikes on their hands and another threatened. On Monday, the mechanical contractors, who have been struck by steamfitters since July 1, took their case for a "fair day's work for a fair day's pay" to the public in five newspaper advertisements

In Rhode Island, the cement masons, with a scale of $3.55, won 15 cents an hour for each of the next three years from the Associated General Contractors. But contractors in Savannah, Ga., said they couldn't boost by 10 cents an hour the present $1.65-$1.75 scale of the laborers, who promptly struck.

Roofers in Dallas, Tex., were striking for 69 cents over three years and glaziers for 50 cents over the same period, after turning down offers of 27.5 and 30 cents for three years. Up in Buffalo, N. Y., the Construction Industry Employers Association, which recently settled a six-week strike with a 60-cent, three-year package, offered the same amount to the operating engineers, who settled earlier for 55 cents.

The Kansas City hoisting engineers' strike, which finally went into televised mediation, followed on the heels of the worst January-March weather in the city's history, which means that most of the construction workers have been idle for over half the year. The strike stalled about 200 major projects and threw some 20,000 workers out of jobs.

Big stumbling block was a union demand for an exclusive hiring hall.

The wage settlement calls for an immediate increase of 12½ cents, followed by three increases of 15 cents each on April 1 of the next three years.

In New York City the construction industry moved into a critical situation because of labor disputes on two fronts.

An interunion dispute between rival units of the maritime and seafarers unions produced a strike by sand and gravel scow captains. Picket lines were honored by truck drivers, pinching off the supply of sand, gravel and ready-mixed concrete to construction jobs.

Although the ornamental iron workers returned to work after accepting a three-year, 65-cent wage increase, plus higher travel pay and insurance up to $100 for loss of tools by fire or theft, the asbestos workers, sheet metal workers and steamfitters were still on strike over new contract demands.

And plumbers working without contracts in Manhattan and the Bronx voted to strike, but set no date. They had rejected a three-year, 73.4-cent contract accepted two weeks ago by four other locals of the plumbers union.

Mechanical contractors have offered steamfitters 73 cents for three years, pushing wages and fringes to $5.04 an hour.

They say the union offers nothing in return and insists on "flagrant featherbedding."

They ask: How much can the public and the industry stand?

'No' to Mitchell

Work on Navy hangar held not within wage-hour law

Workers employed on the construction of an aircraft hangar at a naval air station in Puerto Rico are not covered by the wage and hour provisions of the Fair Labor Standards Act, according to a federal court in Puerto Rico.

The case was brought against the Navy contractor by Labor Secretary James P. Mitchell in an effort to enforce the federal labor law. It presents another example of the confusion that exists in the construction industry over the law's application.

The court found no evidence that the hangar would be used in commerce, and considered it a military facility "exclusively destined to be used in the national defense . . .

"Under no stretch of the imagination, therefore, can it be said that the employees of defendant working in the project at issue here are engaged in commerce within the purview and intent of the act," the court said.

Among the law's requirements are payment of the minimum wage and time and half for overtime in excess of 40 hours a week to employees engaged "in commerce" or "in the production of goods for commerce." The U. S. Supreme Court has given the phrase "in commerce" a broad construction.

The Secretary of Labor argued in the Puerto Rican case that the employees of Nolla, Galib & Compania should be covered by the law because the Navy hangar on which they were working might be used for commercial purposes in an emergency.

The court, in rejecting the argument, said the law's coverage depends on present rather than on future or conjectural circumstances. The facility on which the work is being performed, it said, must be actually used in commerce at the time the work is being performed, or actually intended to be used in commerce afterwards.

The court's decision was based on the facts stipulated by the parties. The stipulation did not indicate that the hanger would be used in commerce.

"The possibility may exist," the court noted, "that in an emergency or in new unforeseen situations the facilities here in question could be sometime in the future used to a limited extent for some commercial purposes. But this does not authorize the court to rate those facilities at present and for the purposes of this action as being used or constructed for use in commerce."

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: August 11, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 11th day of August, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name
DISTRICT No. 10, Austin M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York		
BRONX (Int. Trg. Rte. 95)	FIBETS 60-2	Interstate Route Connection 511 Brucker Expressway (Layton Ave. to New England Thruway) Section 2, Contract 2 including Throgs Neck Expressway Connection Project I-95-1(41)
Bronx (Int. Trg. Rte. 78)	FICBETS 60-3 FITNETS 60-1	Interstate Route Connection 513, Contract 4 Cross Bronx Expressway, S.H. FICBE 59-2P (Graff Avenue to Throgs Neck Blvd.) Throgs Neck Expressway, S.H. FITNE 59-1P (Layton Ave. to Longstreet Ave.) Project I-78-1(50)
Queens (Int. Trg. Rte. 78)	FICETS 60-1	Interstate Route Connection 513, Contract CE-4 Clearview Expressway, S.H. FICE 58-3, FICE 59-1, FICE 59-2, 73rd Avenue to Willets Point Boulevard and Horace Harding Expressway Connection, S.H. FIHHE 58-2 Project I-78-1(51); I-495-1(42)

Miles	Type	Deposit	Estimated Cost of Work
1.73 (5.40 Acc.)	Traffic Signs and Delineators	$7,500 Plans $5	$137,000
2.84	Traffic Signs	$5,500 Plans $5	$98,000
4.78 (11.39 Acc.)	Traffic Signs and Delineators	$16,000 Plans $5	$288,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: August 16, 1960

General Construction of CHA Project

The Chicago Housing Authority invites properly qualified bidders to submit proposals for all labor and material required to complete the General Construction of CHA Project Illinois 2-34, Area 1. The work includes one 8-story building containing 92 apartments, and related utility and site work, all generally in the vicinity of East 50th Street and South Cottage Grove Avenue.

Bids will be received until 2:00 P.M. (local time) on August 16, 1960 by mail or by hand in Room 1500 of the Chicago Housing Authority, 608 S. Dearborn Street, Chicago 5, Illinois, immediately after which time and at such place all bids will be publicly opened and read aloud.

Contract documents including plans and specifications may be obtained on or after July 19, 1960 by depositing $50.00 in the form of a cashier's check, certified check or telegraphic or postal money order with Loewenberg and Loewenberg, Architects and Engineers, 120 South La Salle Street, Chicago 3, Illinois.

Bids: July 31, 1960

Khashm El Girba Dam and Associated Works

THE REPUBLIC OF THE SUDAN
MINISTRY OF IRRIGATION & HYDRO-ELECTRIC POWER

The Ministry of Irrigation & Hydro-Electric Power of the Republic of the Sudan propose to call for tenders for the Main Civil Engineering and Associated Works of the KHASHM EL GIRBA Dam Scheme in the gorge of KHASHM EL GIRBA on the ATBARA. The site is about 4 kilometres upstream of the town of KHASHM EL GIRBA, approximately 437 kilometres from the junction with the main Nile.

The Main Civil Engineering Works will comprise the construction of a buttress concrete dam across the river channel, with earth dams on either flanks, together with control gates and other equipment. The concrete dam will have a length of 350 metres and a maximum height of 55 metres above river bed level. The length of the earth embankments will be approximately 3.5 kilometres.

The Associated Works will comprise the construction of permanent and temporary housing with roads and services.

MAIN CIVIL AND ASSOCIATED ENGINEERING WORKS

1. A preliminary pamphlet showing drawings outlining the work involved will be available for issue now.

The general technical information in connection with the proposed works is indicated in the pamphlet.

2. Contractors who may be interested in tendering for the Main Dam and Associated Works should submit full details of their qualifications and experience as soon as possible and not later than July 31st. 1960 to enable tender documents and drawings to be issued in August 10th. 1960 to those Contractors who satisfy the requirements of the Ministry.

ALTHOUGH THE GOVERNMENT OF THE REPUBLIC OF THE SUDAN IS NOT YET ABLE TO ENTER INTO ANY DEFINITE COMMITMENT, IT IS HOPED THAT THE MAIN CIVIL ENGINEERING WORKS WILL COMMENCE IN NOVEMBER, 1960.

The Consulting Engineers to the Ministry on this Project are:

S. O. G. R. E. A. H.
Societe Grenobloise d'Etudes et d'Applications Hydrauliques, Boite Postale 145
GRENOBLE (FRANCE)

Application for the preliminary pamphlet by bona fide firms should be made to one of the following, with a copy to the Consulting Engineers:

The Ministry of Irrigation & Hydro-Electric Power, The Republic of the Sudan, P. O. Box No. 878 KHARTOUM (SUDAN).

The Director, Ministry of Irrigation & Hydro-Electric Power, The Republic of the Sudan WAD MEDANI (SUDAN).

Applications received after the dates specified above might not be considered.

Bids: August 9, 1960

Delaware Memorial Bridge Repainting Steelwork

DELAWARE INTERSTATE HIGHWAY DIVISION
CONTRACT NO. 41
NOTICE TO BIDDERS

Sealed proposals for repainting steelwork on the portion of the Delaware Memorial Bridge from the east abutment to the east tower, exclusive of the tower, cables and suspenders, at Deepwater Point, New Jersey, will be received by the Delaware Interstate Highway Division at the Administration Building, Delaware Memorial Bridge, near Wilmington, Delaware, until 11:00 A.M. Eastern Daylight Saving Time, on August, 1960, at which time and place said proposals will be opened and read.

Repainting shall consist of cleaning metal surfaces, spot-priming where necessary, and applying one (1) finish coat of paint to all exposed metalwork.

The approximate weight of steelwork to be painted is 9,040 tons.

Work on this project shall begin within ten (10) days after the execution of the Contract and shall be completed on or before December 1, 1960.

Monthly payments will be made for ninety (90) per cent of the work completed each month.

Bidders must submit proposals upon forms provided by the Division.

Each proposal must be accompanied by an acceptable surety bond, certified check or cash in the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all bids.

One set of the contract documents may be obtained from the Delaware Interstate Highway Division at the Administration Building, Delaware Memorial Bridge near Wilmington, Delaware, after July 19, 1960, upon payment of $10.00. Contract documents need not be returned and the above payment will not be refunded. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Delaware Interstate Highway Division
By: J. H. Tyler McConnell, Director
Richard A. Haber, Chief Engineer
Delaware Interstate Highway Division
July 19, 1960

State of New Jersey Department of Conservation and Economic Development

DIVISION OF WATER POLICY AND SUPPLY
BUREAU OF DESIGN AND CONSTRUCTION
TRENTON, N. J.

NOTICE: PREQUALIFICATION FORMS FOR CONTRACTORS

NOTICE IS HEREBY GIVEN THAT

Starting August 1, 1960, the Bureau of Design and Construction will receive application for prequalifications from contractors who may wish to submit bids for proposed hereinafter specified contracts and related work, in connection with the Spruce Run-Round Valley reservoir project as follows:

Contract SR-1, Spruce Run Dam, dikes, spillway and appurtenant structures.

Contract RV-1, Round Valley south dam, tunnel and appurtenant structures.

Contract RV-2, Round Valley north dam, dike and appurtenant structures.

Grouting under Contract SR-1 of cavernous and jointed lime stone foundations.

Grouting under Contracts RV-1 and RV-2 of rock foundations under dams and dike.

Drilling and core boring sampling in connection with grouting operations under contracts above.

In addition, contractors who may wish to submit bids for the two following contracts, to be advertised for bids by the Department of Conservation and Economic Development, must be qualified by prequalification with the State of New Jersey Highway Department:

Contract SR-2, Bridge and culverts for Spruce Run relocated road, classes B to Z, "General Construction" or "Bridge Construction."

Contract RV-3, Round Valley relocated road, classes K to Z, "Paving" or "General Construction."

Prequalification questionnaires for a particular contract will be received up to twenty (20) days preceding the final day for the submission of bids for the contract.

Bids when advertised, will be accepted from prequalified bidders only.

Bureau of Design and Construction
219 West State Street
Trenton, New Jersey

Bids: October 28, 1960

Hydroelectric System TMV—First Stage

INVITATION TO BIDDERS
REPUBLICA DE NICARAGUA
EMPRESA NACIONAL DE LUZ Y FUERZA MANAGUA

July 28, 1960.

The Empresa Nacional de Luz y Fuerza, an autonomous entity of the state, Republic of Nicaragua, announces that having obtained financing from the International Bank for Reconstruction and Development and from the Development Loan Fund for the construction of the first stage of the Tuma-Matagalpa-Viejo Hydroelectric System, will receive sealed bids addressed to the Construction Management of the same entity for the construction of the works described here on, until the 18 hours of the 28 of October of 1960.

Contract No. TMV-Ial

Project: TMV System—First Stage

Work: Mancotal Dam and Appurtenant Works.

Bids will be publicly opened and read aloud by the Construction Management of the Empresa Nacional de Luz y Fuerza in Managua at the 10 hours of the 3 of November of 1960.

Copies of the Contract Documents, plans and specifications may be examined and obtained upon the payment of C$450.00 or US$60.00 in the following places respectively:

1) Empresa Nacional de Luz y Fuerza (Construction Management) Managua, Nicaragua.

2) Electroconsult—13 Via Cavallotti, Milan, Italy.

Contract documents, plans, specifications and general information may be examined at the following places:

1) Empresa Nacional de Luz y Fuerza. (Construction Management) Managua, Nicaragua.

2) Electroconsult S.p.A.—13 Via Cavallotti, Milan, Italy.

3) Nicaraguan Embassy in Washington, U. S. A.—1627 New Hampshire Ave. N.W.

4) General Consulate of Nicaragua in New York—1720 Ave. of the Americas, Rockefeller Center, Suite 2 200, New York, N. Y.

The said work consists of the following:

Location: Work situated 20 kilometers N. W. of the City of Jinotega, Department of Jinotega, on the Tuma River.

Description: Earth Dam and earth dike: Homogeneous type resting on andesitic foundation; maximum height: 46 meters; crest length: 812 meters; total volume: 880 000 m³.

Diversion Tunnel: 52 m² of cross section; length: 340 meters; concrete: 10 500 m³; reinforcing steel: 175 tons.

Spillway: uncontrolled "Morning Glory" type; maximum diameter: 26 meters; concrete: 400 m³ reinforcing steel: 40 tons.

Discharge Tunnel: diameter: 7.5 meters; cross section: 46 m²; length: 267 m; concrete: 3 000 m³; reinforcing steel: 200 tons.

Bids: September 30, 1960

Hydroelectric System TMV—First Stage

INVITATION TO BIDDERS
REPUBLICA DE NICARAGUA
EMPRESA NACIONAL DE LUZ Y FUERZA MANAGUA

July 25, 1960.

The Empresa Nacional de Luz y Fuerza, an autonomous entity of the state, Republic of Nicaragua, announces that having obtained financing from the International Bank for Reconstruction and Development and from the Development Loan Fund for the construction of the first stage of the Tuma-Matagalpa-Viejo Hydroelectric System, will receive sealed bids addressed to the Construction Management of the same entity for the construction of the works described here on, until the 12 hours of the 30 of Sept. of 1960.

Contract No. TMV-Ibl

Project: TMV System—First Stage

Work: access road Jinotega-Casa de Maquinas "Centro America".

Bids will be publicly opened and read aloud by the Construction Management of the Empresa Nacional de Luz y Fuerza in Managua at the 10 hours of the 6 October of 1960. Copies of the Contract Documents, plans and specifications may be examined and obtained upon payment of C$ 250.00 at the:

Empresa Nacional de Luz y Fuerza—Managua, Nicaragua.

Contract Documents, plans, specifications and general information can be examined at the following places:

1) Empresa Nacional de Luz y Fuerza—Managua; Nicaragua.

2) Nicaraguan Embassy in Washington—1627 New Hampshire Ave. N.W.

3) General Consulate of Nicaragua in New York—1720 Ave. of the Americas, Rockefeller Center, Suite 2 200, New York, N. Y.

The said work will consist of the following:

Location: Department of Jinotega

Description: All weather road 18 kilometers long and its required drainage structures. Unclassified earth work: 140 000 m³. Excavation for Structures: 2 500 m³. Total length of culverts from 18" to 72": 1 200 meters. Volume of masonry work: 1 800 m³. Compacted gravel course: 37 500 m³. Concrete 18 m³. Reinforcing steel: 2 tons.

EMPRESA NACIONAL
DE LUZ Y FUERZA

Bids: August 9, 1960

Construction of the Syracuse Service Building In the Town of Lysander, County of Onondaga, New York

POWER AUTHORITY OF THE STATE OF NEW YORK
ADVERTISEMENT FOR PROPOSALS
SPECIFICATION NO. PA-9-6
CONTRACT NO. AL-6

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for construction of the Syracuse Service Building in the town of Lysander, Onondaga County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 9th day of August, 1960, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal item of work is the construction of the service building having approximate overall dimensions of 80 feet by 150 feet. The service building will have concrete foundations and slab, steel frame, concrete block walls, steel roof decking with built-up insulated 20 year bonded roof, and electrical, plumbing, heating, ventilating, air conditioning and compressed air systems with associated equipment.

Also included is miscellaneous exterior electrical, mechanical and civil work.

All materials and equipment required shall be furnished under this contract.

The building shall be ready for occupancy on or before April 1, 1961. All work shall be completed on or before June 1, 1961.

Plans, specifications and proposal forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, specifications and proposal forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 441 Beechwood Avenue, Liverpool, New York and 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the total of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: August 12, 1960

Board of Education Bureau of Construction

Notice Re: Prequalification Forms for Contractors

APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT the Superintendent of Design, Construction and Physical Plant, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts.

General Construction, Plumbing and Drainage, Heating and Ventilating, Electrical Work and Lighting Fixtures.

J.H.S. 294, Brooklyn, DeKalb Avenue between Carlton Avenue and Adelphi Street, Borough of Brooklyn.

The prequalification application form must be secured at the Bureau of Construction, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y. and submitted to the Superintendent of Design Construction, and Physical Plant at the same above address.

Bids when advertised, will be received only from prequalified bidders.

The time for submitting prequalification applications by contractors will expire on Friday, August 12, 1960.

JOSEPH R. WEISS
Superintendent of Design, Construction and Physical Plant.

Starting: Tuesday, July 26, 1960
Five (5) days

Dated: July 21, 1960
JJF:dem

U. S. Government

U. S. DEPARTMENT OF THE INTERIOR, Office of Saline Water. Sealed bids (Specification No. 212) will be received at Washington, D. C. until 3:00 p.m. Eastern Daylight Time, the 20th day of September 1960, for construction of an electrodialysis brackish water conversion plant to be constructed at Webster, South Dakota. Lump sum bid shall include 1. One (1) 250,000 gallons per stream day electrodialysis brackish water conversion plant with building, auxiliaries and accessories all complete in accordance with the specification and erected on the site. The plant shall be complete on 300 calendar days from date of receipt of Notice to Proceed; and 2. A firm bid to cover start-up operation costs during a one-hundred and eighty (180) day test period. For particulars, address U. S. Department of the Interior, Office of Saline Water, Washington 25, D. C., Dr. A. L. Miller, Director.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Specifications Writer. Permanent position available immediately with established Mid-western consulting firm. Architectural degree preferred. Moving expenses paid. 3-week vacation. Salary commensurate with ability. Write P-4694, Engineering News-Record.

Position is open as assistant to President of heavy engineering construction firm in the West. Give experience, education, references and salary expected. P-4822, Engineering News-Record.

Field Supervisor. Large established midwest consulting firm has permanent position in building construction supervision for thoroughly qualified and experienced man. Mechanical engineer preferred. Moving expenses paid. Send complete resume to P-4833, Engineering News-Record.

Foreman and Superintendent for Highway and Airfield construction. Work is located in Kentucky, Alabama and Mississippi. Send complete resume and date available. P-4764, Engineering News-Record.

Assistant or Associate Professor of Sanitary Engineering, with experience in design of water and sewage treatment plants, water and sanitary sewer systems, pumping stations, and industrial waste treatment. Should have M.S., Ph. D. desired. Salary open. Well-known eastern university. P-4769, Engineering News-Record.

Yard Superintendent, precast concrete, north-eastern U. S. Concrete finishing, steel placement and carpentry experience requisite. Must be aggressive. Send full resume and salary. P-4864, Engineering News-Record.

Superintendent: Permanent position in Central Illinois Firm. Must know carpentry, masonry and concrete for small to middle sized general construction work. Should be aggressive and preferably have trade ability. Salary open. P-4855, Engineering News-Record.

Assistant City Engineer—Age, under 50— Civil Engineer—College Degree—two (2) years' experience. Knowledge of street and sewer design and other Municipal functions. Knowledge of operation of Sewage Treatment Plant and Filtration Plant desirable. Write City Clerk, City Hall, Cumberland, Maryland.

Teaching and Research Assistantships are available to qualified students while working for M. S. or PH.D. degree in either solid or fluid mechanics. Write, Chairman, Dept. of Engineering Mechanics, University of Kansas, Lawrence, Kansas.

Materials Engineer wanted by Eastern Consultant. Broad experience required in testing and control of highway materials. Some actual field supervision of highway construction desirable. Must be graduate and have or be able to get professional license. Salary commensurate with age and experience. Complete information, please, in first letter. Reply P-4895, Engineering News-Record.

Graduate Civil, Industrial or Mechanical Engineer to train for responsible position with fast growing building material firm, age 21-35. Write P.O. Box 231, West Palm Beach, Florida.

• POSITIONS VACANT

Madison, Wis. Community Planner IV. $7,-668-$9,900 including longevity salary increases. Graduation from an accredited university with specialization in Civil Engineering, Architecture, Landscape Architecture or Planning and at least 4 years experience in planning. Possess ability to give high-level advice on complex problems in field of planning; in addition requires a working knowledge of platting regulations, land survey practices and precise mapping techniques, as well as of the engineering aspects of development. Registration or qualification for registration as a professional engineer and land surveyor desirable. Considerable experience in dealing with public groups essential. To be responsible for directing current planning activities of city planning department including processing of zoning changes, administration of platting regulations, and supervision of mapping section. Personnel Department, 404 City-County Building, Madison 9, Wisconsin.

Redevelopment Authority, Madison, Wis., Community Planner II $6,132 to $7,692. College graduate with major in architecture, city planning, economics, engineering, geography, landscape architecture, law, public administration, or sociology with courses in accounting plus at least two years' experience in urban renewal planning or in fiscal or accounting affairs of planning projects. Primary responsibility is to assist the director in the design of projects, formulation of research studies and surveys, and planning and controlling the fiscal and accounting affairs of the projects. U. S. Citizenship required. City Personnel Department, 404 City-County Building, Madison 9, Wisconsin.

Writer-editor for house organ in water works field. Engineering background will be helpful. NYC location. Salary $12,000. P-4856, Engineering News-Record.

Teaching and Research Personnel, for Sanitary Engineering. Instructor to Associate Professor with commensurate salary depending on education and experience. M.S. or Ph.D preferred, but will consider man with design or research experience. Location: Mississippi State University, State College, Mississippi.

Steel Detailer—Permanent position available immediately for experienced structural or reinforcing steel detailer. Salary commensurate with ability. Contact Egger Steel Co., Box 495, Sioux Falls, South Dakota.

Engineer—Prominent manufacturer of pressure pipe seeks an engineer experienced in the design, construction, operation and maintenance of municipal water supply and irrigation piping systems and who is capable of interpreting piping requirements for the design and sale of pipe for various field conditions and services in competition with other types of pipe. Work will be in association with Research, Production and Marketing as well as national and local engineering and specification authorities. Location New York City. Submit complete outline of background and experience. P-4889, Engineering News-Record.

Contract Engineer—Must have proven record in closing industrial and petro-chem construction contracts. Salary open. Nationwide firm. Location Texas. P-4897, Engineering News-Record.

Draftsman—experienced structural steel detailer and checker. Permanent position with established consulting firm. Fringe benefits. Submit resume of experience, references, and salary expected. Samborn, Steketee and Associates, Otis & Evans Libbey-Owens-Ford Building, Toledo 2, Ohio.

• SELLING OPPORTUNITY AVAILABLE

Sales Representatives now contacting operators, managers and authorities of civilian airports and airlines as well as architects, engineers and contractors working on airport projects wanted for territorial assignments by established manufacturer of proven equipment in this field. Military connections desirable but not essential. Send resume of experience and present lines handled to RW-4912, Engineering News-Record.

• EMPLOYMENT SERVICE

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 49 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

POSITIONS WANTED

Civil Engineer-M.B.A.-26, 4 years experience, structural design, estimating, supervision. Desires career opportunity to fully utilize engineering and business training. PW-4866, Engineering News-Record.

Graduate C. E.—Super.—Field Engr. 5 Years Constr. supervision on major projects. Available immediately. PW-4837, Engineering News-Record.

Structural Designer, Civil Engineer (Reg. Calif.) 31. Six years design with supervision-commercial, heavy. Seeks responsible position. West or foreign. PW-4875, Engineering News-Record.

Wanted position. Reinforcing detailer 4 yrs. experience in detailing & estimating. PW-4861, Engineering News-Record.

Project Manager, BSCE, reg. in Ohio. 16 years experience in general and heavy construction. Available and will relocate. PW-4878, Engineering News-Record.

Construction Executive: Licensed Professional Engineer; knowledge of government and private contracts; 22 years experience in all phases of construction; buildings, sewage treatment plants, tunnels and dams, jobs management, cost control, purchasing, subcontracting, and processing of government claims. PW-4863, Engineering News-Record.

Construction superintendent considerable experience in industrial and commercial work. PW-4494, Engineering News-Record.

Chief Estimator—Sewage and Water Treatment Plants. Industrial, Commercial, and Architectural Buildings—fifteen years one employer—will relocate to suit. Available immediately. PW-4792, Eng. News-Record.

Registered Architect With Construction Experience here and in Mexico wishes to associate with an American firm to manufacture construction equipment or building materials in Mexico. Will furnish some capital and tools. Will need capital or used tools plus technical assistance. PW-4795, Eng. News-Record.

Hydraulic Dredge Executive Civil Engineer Available. Over 20 years thorough experience in field investigation, cost estimates, management, consulting, full time or project basis. PW-4796, Engineering News-Record.

Construction Superintendent—Wide experience in industrial, institutional, and commercial field as job and general supt. Proven producer. PW-4774, Engineering News-Record.

(Continued on the following page)

• POSITIONS WANTED
(Continued from preceding page)

Supt. or General Foreman—age 43—over 18 years experience highway construction supervising earthmoving equipment, excavating, drainage. Know men, methods and cost. Available at once. A-1 references. PW-4947, Engineering News-Record.

Project Management, Contract Administration, 22 yrs. experience includes, estimating, purchasing, procedures, field supervision, costs, claims. Major heavy-constr. projects U.S. & O.S. PW-4933, Engineering News-Record.

Purchasing Agent heavy construction and manufacturing 24 years experience desires permanent position. References furnished. PW-4946, Engineering News-Record.

Surveyor-Geologist—six years total experience surface and underground surveying, aeromagnetics, photo interp. Seeks resp. position with engineering or exploration company. PW-4904, Engineering News-Record.

Engineer, Surveyor, Computer, Chief of Party. Twenty years, highways, sewers, building layout, realty surveys. Middle Atlantic States. PW-4935, Engineering News-Record.

CE, 14 years coordinating and expediting chemical and petroleum projects, completing foreign assignment Aug. 1. Prime interest: opportunity. Prefer Western U. S. PW-4945, Engineering News-Record.

Construction Manager. Administrative, technical and practical background in highways, bridges, prestressed and reinforced concrete, heavy estimating and engineering-economic reports. Minimum $15,000.00 PW-4944, Engineering News-Record.

Civil engineering and law graduate, 28, member of bar (D.C.), 3 years CEC officer U.S. Navy, 3 years building design & construction with consultant & contractor, seeks position contracting or industrial organization or law firm emphasizing construction contract work. PW-4901, Engineering News-Record.

Construction Executive—Graduate Engineer, BSCE. Experienced as a branch manager and as a chief estimator. 18 years with large competitive general contractors. Prefer California. PW-4940, Engineering News-Record.

President & Treasurer of Heavy Construction Firm—¾ Million Volume—Now Liquidating. Seeking responsible position. PW-4937, Engineering News-Record.

Civil Engineer; A.M. ASCE; B. CE.; M.S.C.E.; Four Years experience foundation engineering; materials testing; will relocate; Southeast. PW-4887, Engineering News-Record.

Resident Engineer. Proj. Mgr. 41. BSCE. Reg. Airport, tunnel, industrial, buildings. Domestic or foreign. PW-4948, Engineering News-Record.

Executive-Engineer—twenty-five years corporate engineer with major process companies, in charge of profitability analysis, cost estimating, site planning, project scheduling, contract negotiation, construction supervision and cost control. M.S. in Civil Engineering. On-time completions, good start-ups, minimum costs. PW-4942, Engineering News-Record.

WANTED
ENGINEERING ASSOCIATES

SANITATION WATER SUPPLY
(foreign & domestic)
PETROLEUM (foreign)
GEOLOGICAL & MINING (foreign)
CHEMICAL & PETRO-CHEMICAL
(foreign and domestic)
WATER RESOURCES (foreign)
HYDRO-ELECTRIC (domestic & foreign)
CONSTRUCTION (domestic & foreign)

President and Vice-President levels.
Complete charge of your own division.
Drawing account against substantial share of Division profits before tax PLUS income from own secured investment.
Minimum Investment $25,000.00
GLOBAL Activity—TOP Recognition

Send complete resume including photo to:

P. O. Box 968,
Station "B", Montreal, Quebec

ENGINEERING & MANAGEMENT
OPPORTUNITY

Due to retirement of one partner we have opening to manage consulting engineering office in Puerto Rico. Must be thoroughly experience in air-conditioning or electrical engineering design. Minimum of 8 years in consulting engineering and with sales & plant contact capabilities. Salary & profit participation. Opportunity for investment if desired. Send complete resume of education, experience, marital status, references, availability date & desired starting salary.

P-4914, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

DESIGN ENGINEERS
SAN JUAN, PUERTO RICO

Minimum 6 years consulting engineering experience in air-conditioning, plumbing or electrical systems or buildings. Permanent positions. Opportunity for associate status. Spanish desirable. Forward complete resume of education, experience, marital status, references, availability date & desired salary.

P-4913, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Sanitary Engineer

Capable of responsible charge of water and sewerage projects, 5 years minimum experience, including investigation, reports, design, layout, and construction supervision. Upstate New York.

P-4890, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Engineers and Architectural Engineers

Veterans Administration has career Civil Service Opportunities for:

Architectural Engineers
(Specification Writers)
Starting Salary $7560

Architectural Engineers
(Estimating)
Starting Salaries $6435, $8955

Professional work in the development of specifications and estimates for VA hospitals. Positions located in Washington, D. C.

Construction Engineers and Mechanical Engineers
Starting Salaries, $6435, $7560, $8955

Professional supervision of the construction of VA hospitals and related facilities. Positions are located throughout the U. S.

B. S. or Professional Degree in engineering and/or professional experience required. Starting salary is dependent upon experience. Liberal leave, life & health insurance plans, good retirement benefits, 40 hour week. Address inquiries to

DIRECTOR,
CENTRAL OFFICE PERSONNEL SERVICE
VETERANS ADMINISTRATION
WASHINGTON 25, D. C.

GRADUATE CIVIL or ARCHITECTURAL ENGINEERS

We are looking for a young, recent college graduate, with a degree in either architectural or civil engineering, for a position in our El Paso, Texas—Estimating Department. This position provides a training ground for our future superintendents and executives. It is an excellent opportunity for a young man to obtain a desirable position with a reliable firm doing all types of construction work.

ROBERT E. McKEE
GENERAL CONTRACTOR, INC.
PO BOX 562 EL PASO, TEXAS

"Put Yourself in the Other Fellow's Place"

TO EMPLOYERS—TO EMPLOYEES

Letters written offering Employment or applying for same are written with the hope of satisfying a current need. An answer, regardless of whether it is favorable or not, is usually expected.

MR. EMPLOYER, won't you remove the mystery about the status of an employee's application by acknowledging all applicants and not just the promising candidates.

MR. EMPLOYEE you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section.

We make this suggestion in a spirit of helpful cooperation between employers and employees.

This section will be the more useful to all as a result of this consideration.

Classified Advertising Division

McGRAW-HILL PUBLISHING CO., INC.
330 West 42nd St., New York 36, N. Y.

City of Rochester, N. Y.
has an opening for

SANITARY ENGINEER

Salary $9432-$11,418

Requirements, in addition to degree, 10 years Sanitary Engineering experience which included 4 years in sewage plant operation.

Applications may be obtained and must be filed by August 23, 1960.
Examination Sept. 17, 1960

Municipal Civil Service Commission
214 City Hall Annex, Rochester, N. Y.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured 7/8 inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

FOR SALE

(1) 20 Batch Boards for 6 Wheel Trucks —Fit Std. 10 C.Y. Body.
(2) Rooter Letourneau Keorooter on Rubber
(3) Lima Compactor—Mo. C.
(4) HiLo Pavement Detector — Vicking Manufacturing Soil Test. Mo. CT-85

WILLIAM J. ORR, WILLIAM C. ORR, *DONALD J. ORR*

ORR CONSTRUCTION COMPANY

27 EAST NINETEENTH PLACE
CHICAGO HEIGHTS, ILLINOIS
TELEPHONE SKYLINE 5-9090

SELECT
Contractor Associate

wanted by
RESPONSIBLE
International Engineering
Company
with
GLOBAL ACTIVITIES
Min. investment
$100,000.
Fully secured by
Real and Tangible Assets

Wire or phone

Norman S. Brooke, *Vice-Pres.*
GUARDIAN TRUST COMPANY
Montreal — Canada
Victor 2-8251

CONSTRUCTION SUPERVISION

Extensive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.

National Schools of Construction
Est. 1932
Satsuma, Florida

FOR SALE:
2 MODEL 25
NORTHWEST BACKHOES
With Murphy Diesel Engines
EXCELLENT CONDITION
Both F.O.B. South Brunswick, N. J.

SERIAL #19137 $17,500
SERIAL #16017 $14,500

KENDALL BUILDERS, INC.
10 Allston Road Franklin Park, N. J.
DAvis 9-6955

PUMPCRETE
Current Models Sale or Rent
Engineering Service & Parts
R. T. SHERROD
Concrete Equipment Company
Jones Island, Milwaukee 7, Wis.

FOR RENT
MODEL 955 P&H CRANE

Magnetorque controls. Just overhauled with new motor. Carries 2½ yard bucket with 100 ft. boom.

SAGINAW ROCK PRODUCTS COMPANY
SAGINAW, MICH.

U. S. Army Telephones EE-8 fully reconditioned. Suitable for intercommunication between 2 or more points. $35.00 for 2 telephones, including 100 ft. of wire and batteries. Additional wire 1¢ per ft. or $25.00 per mile. Write for free list on telephones. All shipments F.O.B. Simpson, Pa.

TELEPHONE ENGINEERING CO.
Dept. ENR-90 Simpson, Pa.

GOOD BARGAIN

Model 27FD, 15 Ton Euclid Rear Dump
Model 2LD, 22 Ton Euclid Rear Dump
Model S-12, 12 cu. yd. Euclid Scraper
Model 60kw, General Motors Diesel Gen. Set

STANDARD EQUIPMENT CO.
340 Pierce St. Kingston, Pa.
Phone BUtler 8-1426

PIPE
Surplus New & Used
FOR SALE, WANTED OR RENT

Euclid Rear Dumps

For sale or rent—two 46TD 22 ton rear dumps. Year 1953. Powered by 300 h.p. Cummins engines. Excellent condition. Immediately available.

Subject to prior sale or disposition

L. B. SMITH, INC.
Syracuse, N. Y. Phone: GR 5-2196

High Speed in 6x6's
NEW ISSUE TRUCKS
GMC! MACK! REO "Eager Beaver!"
• *Tandem Axle* • *Front Wheel Drive*
For specifications, prices, delivery, write
MEMPHIS EQUIPMENT COMPANY
P.O. Box 3852, Dept. E., Memphis, Tenn.
NATION'S LARGEST ARMY TRUCK DEALER!

FOR SALE
Tunnel Equipment & Utilities

Headframe; Hoists; Compressors; Generators; Locomotive; Muckers; 60# Relay Rail; 4", 6", 8", 26" Naylor Spiralweld Pipe; etc.

West Delaware Tunnel Constructors
Livingston Manor, N. Y.
Phone: Livingston Manor 500

Call: HYACINTH 7-4900

PIPE, VALVES & FITTINGS
PILING • CULVERTS
ASBESTOS-CEMENT PIPE • ALUMINUM PIPE

ALBERT PIPE SUPPLY CO., Inc.
103 VARICK AVE., BROOKLYN 37, N.Y.

RAILS-TIES
TRACK ACCESSORIES

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

ASSOCIATED PIPE & FITTING CO., INC.

PILING PIPE SHELLS MANDREL FITTINGS	"H" BEARING PILE SLEEVES AND SHOES	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH SECTIONAL

262 RUTHERFORD BLVD., CLIFTON, N.J. • PR 3-8400

RAILS
MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W.VA.

TRANSITS & LEVELS
Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Distributors for W. & L. E. Gurley and Wild Heerbrugg Instruments

NATIONAL BLUE PRINT CO.
Established 1913
210 S. Canal St. Chicago (6), Ill.

	2,000,000 ft. 2"	3.50¢	to the foot
	1,000,000 ft. 3"	7.70¢	
PIPE	1,000,000 ft. 4"	10.98¢	PIPE
	500,000 ft. 6"	19.80¢	
	200,000 ft. 8⅝"	28¢	
	400,000 ft. 10¾"	35¢	
	75,000 ft. 12¾"	40¢	
	10,000 ft. 18"	42¢	

All No. 1 Grade Plain End and Cleaned
INDIANA-OHIO PIPE CO.
P. O. Box 5412 Shepard Station, Tel: CL-3-5527
COLUMBUS 19, OHIO

Somebody—Somewhere,
needs your idle equipment! Reach that buyer quickly and economically thru the
"SEARCHLIGHT SECTION"
The meeting place of Used Equipment Buyers and Sellers

1) **Brand new S-18 Euclid, 21 cu. yd., scraper, latest type with 27:00X33-24 ply tubeless tires, factory price $57,385. Our dealer net cost, F.O.B. Chicago, $47,650**

1) **Brand new Model 1UD-R10 Euclid rear dump truck with standard 70BY quarry body, two yard top extensions, heater, defroster, hood sides, price F.O.B. factory $22,933. Dealer cost F.O.B. Chicago, $18,405**

We have been the Euclid dealers in Chicago and have just cancelled our Euclid franchise and have these two new machines left in stock, which we are offering at dealer's cost, F.O.B. Chicago, Illinois

We also have the following rebuilt equipment in stock, available for immediate sale:

5) Euclid 13 yd. bottom dumps

4) Euclid 6 wheeler 14TDT rubber tired 15.5 cu.yd. scrapers

5) Rebuilt TS-24 Euclid twin engine rubber tired scrapers

1) Mod. TC-12 Euclid crawler tractor with dozer, used 5 months, rebuilt

1) Mod. TC-12 Euclid twin engine crawler tractor with pushblade, rebuilt

2) Rebuilt TS-24 Euclid twin engine, rubber tired scrapers, used five months, located in Memphis.

GIL BOERS EQUIPMENT COMPANY
7625 SO. KEDZIE AVENUE,
CHICAGO 52, ILL.
PROSPECT 6-4000

FOR SALE
Excellent Condition

Model MC-424
Lorain Truck Crane
on Standard 6 x 4 Moto-Crane Carrier

Located West Coast

FRAZIER-DAVIS CONSTRUCTION COMPANY
1319 MACKLIND AVENUE
St. Louis 10, Missouri
STerling 1-1950

For Sale: DRAGLINES—SHOVELS—CRANES
All makes and models, ½ yd. to 35 yd.
EUCLIDS: Rear, Bottom Dumps and Scrapers
Other equipment available not listed above
William Lubrecht, III Construction Equipment
311 W. Diamond Avenue, Hazleton, Pa.
Gladstone 5-4041 5-0253

Your Inquiries to Advertisers Will Have Special Value . . .

— for you — the advertiser — and the publisher, if you mention this publication. Advertisers value highly this evidence of the publication you read. Satisfied advertisers enable the publishers to secure more advertisers and — more advertisers mean more information and more products or better service—more value—to YOU.

PRICED FOR IMMEDIATE SALE

CONSTRUCTION EQUIPMENT IN EXCELLENT CONDITION

Michigan Model 175-A Front End Loader 2½ yard Bucket—Serial #2839
Tractor & Dozer Caterpillar Model D-9 Serial #19A 797
Tractor & Dozer Caterpillar Model D-9 Serial #19A 849
Tractor & Dozer Caterpillar Model D-8 Serial #14A 4529
Tractor & Dozer Allis-Chalmers Model H.D.-16 Serial #HD16-1071
Letourneau-Westinghouse Tournapull Model D Serial #60163
Scraper Model DM Serial #S90173
Buffalo-Springfield Kompactor Model K with Cat Diesel Engine Serial #28868
Schield Bantam Truck Crane and Backhoe Attachment Model 300

These machines may be seen and inspected at anytime at our Terminal Avenue, Clark, New Jersey Yard

VILLA CONTRACTING CO., INC.
233 North Ave. Adams 2-4111 or Fulton 8-6500 Westfield, New Jersey

---

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

• DROP HAMMERS • DRIVING CAPS • HOISTS AND BOILERS
• STEEL LEADS • PILE DRIVER HOSE • STEEL SHEET PILING

CONMACO, INC.
DRexel 1-3930
820A KANSAS AVE.,
KANSAS CITY, KANS.

PILING
SURPLUS NEW and USED For Sale, Wanted or Rent

NORTH–SOUTH, EAST or WEST

PILE DRIVING EQUIPMENT AT YOUR FINGER TIPS

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

H & SHEET STEEL PILING
3700 PCS. BETH. SPSA, 50' 55' & 48' & 40' & 35'
1900 PCS. MPII2—12', 25', 35', 40', & 60'
2000 PCS. BETH.—AP3 20', 25', 30', 35', & 60'
2300 PCS. BETH.—DP3—31', 35', 40', 50', 60'
1200 PCS. ZP38-ZP32—25', 30', 50', 60' & 65'
1400 PCS. BP8, BP10, BP12—BP14—55' to 60'
600 PCS. BETH. ZP27—25', 30', 50' & 60'
500 PCS. 15' Corrugated Piling

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
TORONTO—BALTIMORE—JACKSONVILLE
MIAMI—RICHMOND—NEW ORLEANS

DIESEL LOCOMOTIVES & CRANES
12—Gen. Elec. 100, 80, 65, 45, 25 & 23 ton
25 Ton Industrial Loss Crane, 60' Boom

20 TON STIFF LEG DERRICK
1—AH&D, 40' Mast, 90' Boom, 10' BW

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephones MU 2-3075 or MU 2-1898

PILING IN SOUTH
200 pcs. 10 in. 42 lb. 12 in. 53 lb. 60' BP
900 pcs. MII5, MII6, DP2, 12' to 60'
E4 Extractor & B3 Hammer
900 pcs. Larssen II 30' & 40'
Stocks Jax—Miami—New Orleans—Tampa

THE SEABOARD STEEL CORP.
Tel. Ringling 7-0481 P. O. Box 5071 Sarasota, Fla.

1500—H BEARING PILES
8" 36 lb. 10" 42 lb. 12" 53 lb. 14" 73 lb.
Stocks: Buffalo, N. Y., Baltimore, Md., Albany, N.Y., Newark, N. J., Jacksonville, Fla.

R. C. STANHOPE, INC.
Tel. MU 2-3076 or 2-1898
60 E. 42nd St. N. Y. 17, N. Y.

When you need PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know quickly, where to buy good new or used piling.

PROFESSIONAL SERVICES

Layne-New York Co., Inc.

Test Borings ● Core Drilling
Grouting ● Drilled Shafts
Water Wells ● Water Treatment
150 Denton Ave., New Hyde Park, N.Y.
431 Market St., Camden, N. J.
1250 W. Elizabeth Ave., Linden, N. J.
15 Ryder St., Arlington, Mass.
5655 Bryant St., Pittsburgh 6, Pa.

MIDDLE ATLANTIC

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations, Express Highways
Administrative Services
Kansas City - Cleveland - New York

E. Lionel Pavlo

Consulting Engineer
Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

Lawrence S. Waterbury

Consulting Engineer
Bowling Green 9-9298
26 Broadway New York 4

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CLASSIFIED ADVERTISING INDEX

Albert Pipe Supply Co..... 88
Associated Pipe & Fitting Co..... 88
Concrete Equipment Co..... 88
Conmaco, Inc..... 89
Director Central Office Personnel Service..... 87
Frazier-Davis Construction Co..... 89
Gil Boers Equipment Co..... 89
Guardian Trust Co..... 88
Indiana-Ohio Pipe Co..... 88
Kendall Builders, Inc..... 88
Lubrecht, William III..... 89
McKee, Robert E., Genl. Contractor, Inc..... 87
Memphis Equipment, Co..... 88
Midwest Steel Corp..... 88
Mississippi Valley Equipment Co..... 89
Municipal Civil Service Comm..... 87
National Blue Print Co..... 88
National Schools of Construction..... 88
Orr Construction Co..... 88
Saginaw Rock Products Co..... 88
Smith, L. B., Inc..... 88
Standard Equipment Co..... 88
Seaboard Steel Corp..... 89
Stanhope, R. C., Inc..... 89
Telephone Engineering Co..... 88
Villa Contracting Co., Inc..... 89
West Delaware Tunnel Constructors.. 88
Wilson Engineering Corp..... 88

ADVERTISERS IN THIS ISSUE

Acker Drill Co., Inc. 75
Air Placement Equipment Company 75
Allis-Chalmers 1
Alpha Portland Cement Company 81
Armco Drainage & Metal Products, Inc. ..... 2nd Cover

Bethlehem Steel Co. 34-35
Borden Metal Products Co. 18
Broderick & Bascom Rope Co. ..... 4th Cover

The Celotex Corp. 61
Chicago Pneumatic Tool Company, Reichdrill Div. 11
Clark Equipment Co., Const. Mchy. Div. 69; 71
Concrete Reinforcing Steel Institute 55

Douglas Fir Plywood Association 56-57

The Eimco Corporation ..... 3rd Cover

L. B. Foster Co. 16

Gulf Oil Corporation 46-47

Halliburton Company 13
Harbert Construction Corp. 52
Hendrix Manufacturing Co., Inc. 48
Hercules Motors Corporation 28-29

Ingersoll-Rand Company 25

Koppers Company, Inc., Tar Products Div. .. 53

LeRoi Div., Westinghouse Air Brake Co. ... 50
Link-Belt Speeder Corp. 8-9
Lock Joint Pipe Co. 14
E. J. Longyear Company 54

Macomber, Inc. 3
Maxim Evaporator Div. 6
Mayo Tunnel & Mine Equipment 91
Miller Electric Mfg. Co., Inc. 91
Mobile Drilling, Inc. 80
Morris Machine Works 40
Mueller Co. 27

Norton Company 49

Pacific Crane & Rigging Co. 80
Perlite Dept., Great Lakes Carbon Corp. .. 38-39
Phoenix Bridge Company 91
H. K. Porter, Inc. 44
Portland Cement Association 45
Posey Iron Works, Inc. 65
Precision Instruments Inc. 52

Richmond Screw Anchor Co., Inc. 2
John A. Roebling's Sons Division, The Colorado Fuel and Iron Corporation 43
Rollway Bearing Co., Inc. 66-67

Sonoco Products Company 72-73
Spencer, White & Prentis, Inc. 55
John W. Stang Corp. 54

Texaco Inc. 4-5
The Travelers Insurance Co. 10
Twin Disc Clutch Co. 12

U. S. Steel Corp. 62-63

Wagner Electric Corp. 33
Waljohn Waterstop, Inc. 51
Wild Heerbrugg Instruments, Inc. 7
Williams Equip. & Supply Co. 65

Professional Services 90

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 86-87
Notices Proposals 83-85
Equipment (Used or Surplus) (For Rent, Sales Wanted) 88-89
Advertisers' Index 90

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Poetic Prose on Construction

ROBERT MOSES, the many-hatted public works administrator, who now will produce the 1964 New York World's Fair, also has a reputation as a phrase-maker and a writer. The reputation is well deserved, as note this excerpt from a recent speech to newspaper editors whom he had just shown the great Niagara job being performed by his Power Authority of the State of New York.

"There is nothing quite like directing thousands of free men of all sorts of skills in one gigantic construction enterprise. There is something symphonic about this, with a theme, counterpoint, conflict, discord and finally harmony, familiar to every man in the orchestra from baton through the strings, woodwinds and brass to the percussion instruments. Good bosses know when the musicians are working together and when they are not. If you think this is a contrived metaphor you don't know big construction."

Similes like this are rare. They should be cherished.

Engineers Aid World Peace

IT IS SIGNIFICANT that only a month after riots in Tokyo prevented a visit to Japan by President Eisenhower an international technical conference was held in that country without incident. The Second World Conference on Earthquake Engineering (see p. 24) was attended by representatives of 27 different countries, including seven participants from Iron Curtain countries. The United States, with 37 attending, had the largest delegation from outside Japan.

Such meetings as this demonstrate that there can be international cooperation and understanding. There is, of course, an obvious mutuality of interest in such a frightening natural phenomenon as an earthquake. And, because temblors have been known to occur in almost every part of the world, engineers from many countries can easily expand this interest to international cooperation on methods of coping with earthquakes. But engineers also cooperate internationally, and just as readily, on less compelling problems—the design and construction of bridges, for example, or hydro plants or dams. The fact is that this mutual interest in technology is usually so intense as to transcend differing political beliefs and social customs, and thus lead to a high order of mutual understanding.

One of the most important causes of world tension today is a lack of such mutual understanding on the part of the peoples and the nations of the world. The riots that prevented President Eisenhower's visit to Japan were primarily due to lack of understanding by a segment of the Japanese population of the intent of the United States in connection with its peace treaty with Japan. It was also this lack of understanding that permitted certain elements to fan the riots to fever pitch and embarrass the United States internationally.

It would, of course, take many more international technical conferences than can possibly be held to develop the widespread mutuality of understanding that would guarantee peace in the world. But the engineers of the United States and of the other nations who develop and participate in such international meetings as the one on earthquakes are nevertheless making significant contributions to this important cause.

Latin American Aid

ENLARGED OPPORTUNITIES for the U. S. construction industry to lend a helping hand abroad appear in President Eisenhower's announcement that he will ask Congress to appropriate additional funds to aid Latin American countries to improve living standards for the masses of their people.

This new emphasis on Latin American aid illustrates and affirms a statement made in an editorial on this page as recently as July 7. Speaking of foreign aid, we said that "its orientation and points of impact must frequently be changed" because it is "an essential part of defense." Latin America is to be one of these new points of impact. And even though aid there will be oriented more toward the economic than the military, it unquestionably will be tied closely to defense—ours and our Latin American friends—because the Soviets have publicly marked these countries for economic and political subversion.

Since the war U. S. aid to Latin American countries has approached a sum of $4 billion, about half in grants of various kinds and half in loans by the Export-Import Bank. Plans to step up the availability of loans have been under way for some time through the organization of an Inter-American Development Bank. Now, the President's proposal would seem to contemplate an increase in the amounts of direct grants, coupled with more participation by the Latin American countries themselves. Details will be worked out at a meeting of economic representatives of the twenty-one American republics scheduled for Bogota, Colombia in September.

Much of this foreign aid will show up in construction as it did in Europe during the reconstruction period and is now doing in the underdeveloped countries of Asia. Participation in this foreign work by U. S. engineers and contractors has been an important characteristic of the U. S. construction industry during the post-war years. With the announced intention of greater emphasis on foreign aid to the Latin American countries, overseas construction opportunities will be considerably enlarged, but so also will the responsibility to carry out every job with utmost efficiency and economy. Because of our close and friendly relations with these countries such responsibility should be the keynote of Latin American aid.

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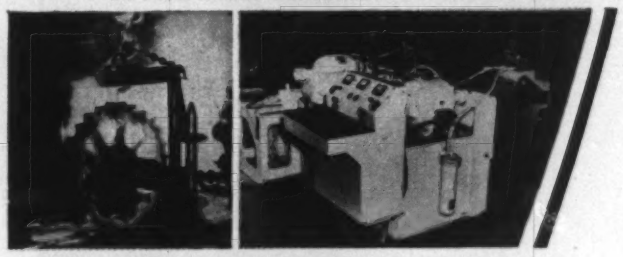

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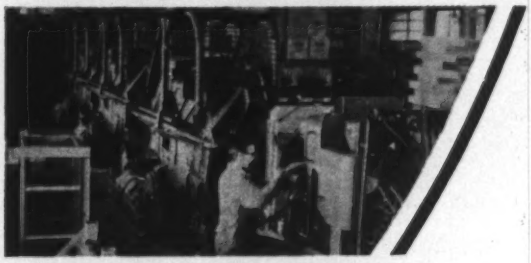

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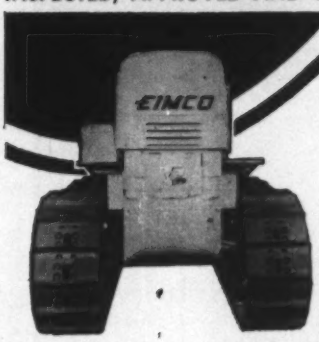

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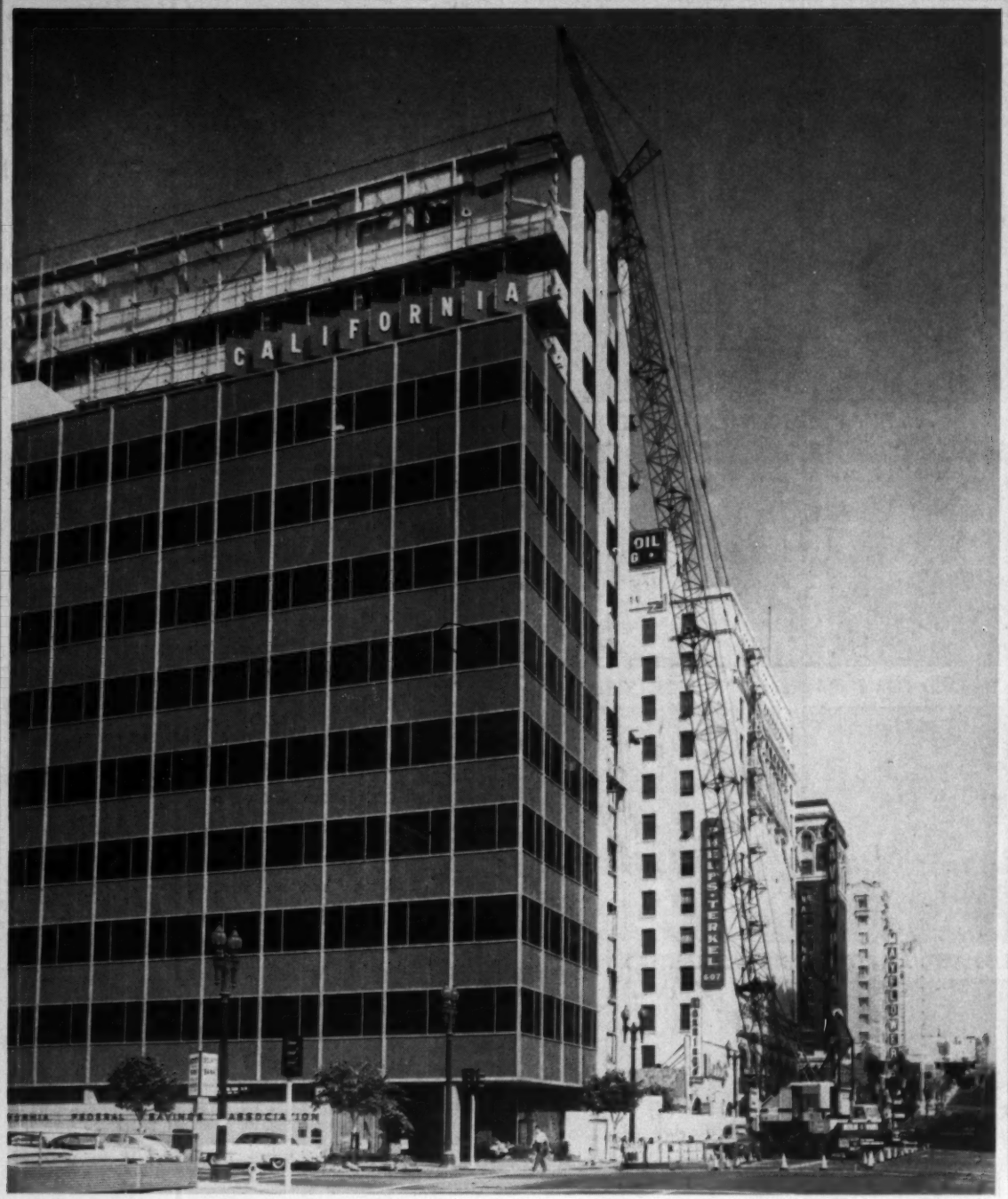

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